

Burning the Bullet

INDUSTRIAL AMMUNITION DEMILITARIZATION

States procure more conventional ammunition than they use. Despite other disposal initiatives, a large part of a nation's surplus ammunition stockpile will ultimately require *demilitarization*—a process by which ammunition is safely dismantled or destroyed while, ideally, its valuable materials are recovered. Most Western countries have 'organic' demilitarization facilities, meaning that they are state-owned and operated by a Ministry of Defence (MoD); these facilities regularly process ammunition that has been declared unsafe for operational use by security forces. This is typically performed by the military using simple dismantling techniques or by open burning and open detonation (OB/OD).

A limited number of capable companies occupy the international demilitarization market.

Yet the end of the cold war created vast surplus ammunition stockpiles, which this 'organic' demilitarization capacity was not able to address. Because of the large tonnages involved and given time pressure—as the ammunition tends to become unsafe with age—industrial demilitarization became a cost-effective and efficient option. These complex processes require specialized, automated machinery, flexible lines, and high production rates that only industry can provide. The large, post-cold war ammunition stockpiles in the United States and Europe provided the necessary economies of scale for this industry to thrive.

This chapter presents an introductory snapshot of the world's major industrial demilitarization contractors by examining their activities, technologies, markets, and challenges. It relies on recent input from industry representatives, unclassified and declassified NATO documents, and interviews with key demilitarization stakeholders in the governments and international organizations. The chapter focuses on Western and Central Europe as well as on the United States and Canada, which account for the vast majority of industrial demilitarization activity worldwide.

Among the chapter's key findings are the following:

- The demilitarization industry is currently centred in Western Europe and the United States.
- The industry operates under standard competitive tendering rules.
- While the technology exists to destroy the vast majority of ammunition types, it may not be available in the timeframe required and is generally lacking in countries that need it most.
- Aside from the United States, where a few contractors struggle to reduce the massive conventional ammunition stockpile, many NATO nations' industrial facilities have underutilized demilitarization capacity.

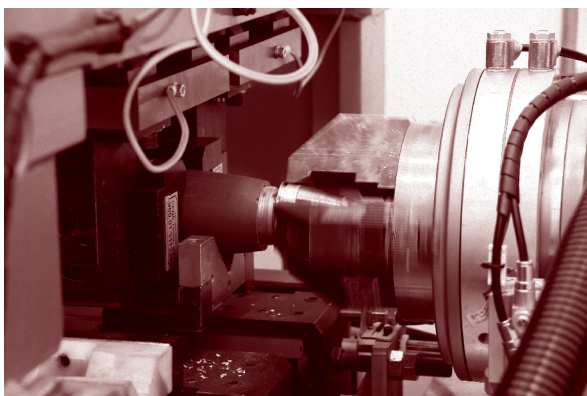


Photo (left): A projectile's nose fuse is removed remotely during the automated disassembly process, Kirikkale, Turkey, September 2007. © NATO Support Agency

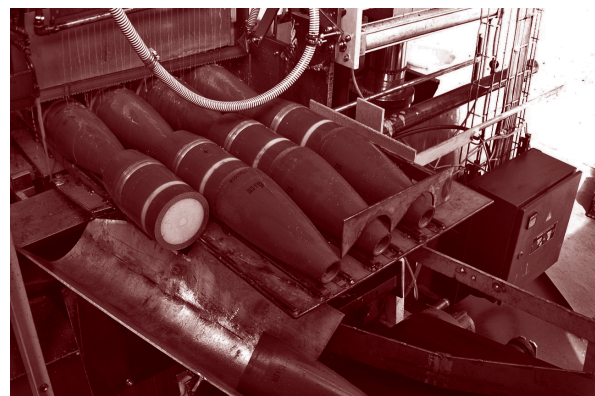


Photo (right): Saws cut high-explosive projectiles, exposing their energetic content. The components then travel on a conveyor belt to the next station, where the explosives are melted out. Lübben, Germany, 2012. © Spreewerk Lübben GmbH

Table 9.2 Indicative ammunition demilitarization costs, 2011

Ammunition type/component	Indicative costs (EUR/tonne)
Small arms ammunition* (<20 mm calibre)	101-529 (USD 132-691)
Fuses	237-1,039 (USD 310-1,357)
Propellants**	856 (USD 1,118)
Warheads (high-explosive)***	564-610 (USD 737-797)
Cannon and medium calibre (20-105 mm)	419-757 (USD 547-989)
Pyrotechnics	1,654 (USD 2,160)

Notes:

* Dependent on technique and economy of scale.

** Conversion to commercial explosives may lead to cost recovery.

*** Costs after removal and destruction of cartridge cases.

Source: UNODA (2011b)

- Cluster munitions, especially multiple-launch rocket system rockets, still account for a significant part of the demilitarization activity in the United States and Western Europe.
- Most nations' ammunition destruction regimes involve a combination of both OB/OD and industrial demilitarization methods.
- The costs involved in transporting and demilitarizing large quantities of ammunition can be significant and are a heavy burden on an MoD's budget.
- There is currently no common international or European standard, legislation, or compliance mechanism that specifically addresses ammunition demilitarization by commercial contractors.
- MoDs are not automatically involved in the commercial ammunition demilitarization sector's activities, unless munitions from their national armed forces are concerned.
- In countries where industrial demilitarization is less developed and contractors do not meet prevailing safety standards, the potential for accidents is much higher during industrial processes.

Policy-makers and programmers tend to be poorly informed about the demilitarization industry's activities. Yet research shows that US and Western European contractors routinely process significant amounts of conventional ammunition. They are also important actors in international donor-funded arms control and ammunition demilitarization programmes.

Environmental legislation has both stimulated and limited industrial demilitarization activities.

Industrial demilitarization contractors operate under a complex regulatory framework, blending classified military ammunition standards with general civilian legislation aimed at controlling large continuous processing operations. Among other factors, compliance with international, regional, and national environmental legislation has influenced the development of industrial demilitarization technologies for disassembly, incineration, and contained detonation of conventional ammunition. Increasingly strict environmental emission limits—especially in the EU—have mandated the inclusion of complex pollution control systems at the end of the demilitarization lines, as well as the recovery, recycling, and reuse (R3) of ammunition components. This remains an important requirement in the industry.

Yet the requirements of environmental compliance are often at odds with the international community's push for speedy surplus destruction at reasonable cost (see Table 9.2). For example, multiple licensing requirements slow demilitarization programmes, while the need to comply with environmental legislation increases the costs of demilitarization for client governments. The current debates surrounding the environmental impact of OB/OD and the extent to which R3 revenues can offset overall demilitarization costs reflect the underlying struggle between environmental imperatives and the need for cost-effectiveness in industrial ammunition demilitarization.

This chapter begins by describing the industry's actors and the markets in which they compete, as well as opportunities that are likely to emerge in the foreseeable future. The section that follows identifies the industry's activities, its core industry processes, and its general capabilities and capacities. The third section details the industry's complex regulatory and compliance regime as well as its logistical and safety constraints. The final section highlights the ongoing debate on environmental considerations versus cost-effectiveness, discussing the advantages and drawbacks of OB/OD as well as the relevance of R3 policies. ■