

Implementation aspects of stockpile destruction

Vera Bohle

Stockpile destruction will prevent future use and proliferation of cluster munitions. Article 3 of the Convention on Cluster Munitions (CCM) requires each state to destroy all stockpiles of cluster munitions under its jurisdiction and control within eight years of entry into force for that state party. This deadline can be extended for an additional four years and further extensions of four years may also be granted in exceptional circumstances. Article 6(5) requires that each state party in a position to do so shall provide assistance for the destruction of stockpiled cluster munitions, and Article 7 outlines the transparency measures that should be taken during the process.

The destruction of stockpiled cluster munitions is more complicated than the destruction of other conventional munitions such as anti-personnel mines due to their unique characteristics:

- there are large numbers of individual submunitions in a container, and each has to be removed individually for destruction;
- most explosive submunitions incorporate an integral detonator, which is very difficult to remove, and can, depending on the fuze, make manual reverse assembly hazardous or even impossible; and
- large amounts of metal casing and packaging remain after the destruction of the explosive components.

Scope of the problem

The Cluster Munition Coalition (CMC) believes that a total of 85 countries have possessed stockpiles of cluster munitions at some point in time.¹ Of these, 37 have signed the CCM as of March 2010. CMC considers 79 countries still to be in possession of stockpiles, of which 32 have signed the CCM. The total number of stockpiled cluster munitions is not known, but probably amounts to several billion submunitions.² Most countries acquired their stockpiles from national production or importation, while others “inherited” the munitions upon gaining independence.³

Table 1 summarizes the limited information available on global stockpiles. More than 200 different types of cluster munitions have been developed or produced.⁴ Destruction of some has already taken place because they had reached the end of their shelf-life or were considered unreliable.⁵

Vera Bohle is Senior Expert in Evaluation and International Humanitarian Law at the Geneva International Centre for Humanitarian Demining.

Destruction of cluster munition stockpiles

The destruction of any munition is a potentially hazardous task. The risks are minimized if the correct procedures are followed. The obligations of the CCM will increase the number of cluster munitions to be destroyed significantly, and a number of countries do not yet have experience with cluster munition stockpile destruction; avoiding bottlenecks in the industrial destruction process will be an important consideration.

Standards and laws

The CCM obliges states parties to ensure that destruction methods comply with applicable international standards for protecting public health and the environment.⁶

There are a number of standards available for the destruction of conventional ammunition stockpiles.

- The International Mine Action Standards (IMAS)⁷ contain a *Guide for the Destruction of Stockpiled Anti-personnel Mines* (IMAS 11.10), but as the title indicates, this refers to the destruction of anti-personnel mines only.
- The North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAGs) provide a number of standards related to conventional ammunition, for example on design principles, qualification for military use, storage, transport, safe disposal or whole life/safety assessment. However, they do not provide information specific to cluster munitions.⁸
- The *OSCE Handbook of Best Practices on Conventional Ammunition* provides general guidance on the destruction of conventional ammunition.⁹ Again, nothing specific on cluster munitions is contained in this handbook.

The process to include relevant aspects of the CCM in IMAS, such as cluster munition stockpile destruction, is ongoing. A review of various IMAS chapters has been conducted to address the requirements of the CCM.

Furthermore, the UN General Assembly has mandated the production of International Ammunition Technical Guidelines.¹⁰ These guidelines should be completed by end 2010.

Table 1. Submunitions contained in known stockpiles of cluster munitions

Signatory states	
United Kingdom	38,700,000
Germany	33,000,000
Netherlands	26,000,000
France	14,900,000
Norway	3,100,000
Austria	798,336
Spain	251,836
Slovenia	52,920
Non-signatory states	
United States	730,000,000
Bahrain	6,100,000
Jordan	3,100,000
Morocco	2,500,000
Egypt	2,200,000
Saudi Arabia	1,200,000

Source: Human Rights Watch, Landmine Action et al., 2009, *Banning Cluster Munitions: Government Policy and Practice*, Mines Action Canada, May, p. 20.

They will cover, among other things, aspects related to the demilitarization and destruction of stockpiles of ammunition, including cluster munitions. They could eventually become a substitute for the IMAS related to stockpile destruction.

In summary, there are currently no specific international standards for the destruction of cluster munitions beyond what is set out in the CCM, but they will soon be available and there are standards for conventional ammunition overall. There are a number of regional and national laws and regulations relevant to cluster munition stockpile destruction, which cover environmental issues, accident prevention, worksite safety, transport, explosives handling, weapons control, foreign trade and demilitarization.

Environmental aspects

There are internationally accepted standards for the determination and measurement of air pollution from industrial processes, which apply to cluster munition stockpile destruction. However, these standards only apply to the measurement of emissions, they do not provide guidance on what the overall emission limits should be: this remains the responsibility of the national authority.

The only supranational legislation that covers emissions into the atmosphere from incineration of waste is the Directive of the European Parliament and Council on the incineration of waste.¹¹ It is relevant for the destruction of cluster munitions in the European Union and associated countries.

The directive is designed to promote environmental protection and human health by preventing or limiting negative effects on the environment from the incineration of waste, in particular pollution by emissions into air, soil, surface water and groundwater. This is achieved by means of stringent operational conditions and technical requirements, emission limit values, and by obliging member states to meet the requirements of other directives dealing with waste. The directive also foresees control and monitoring of emissions by the responsible national authority, and it defines measurement requirements.

The United Nations Environment Programme (UNEP)¹² has undertaken research on the environmental consequences of armed conflicts and explosive remnants of war. Based on a case study from Bosnia and Herzegovina, UNEP has pointed out that open ammunition destruction can lead to surface and subsurface contamination with heavy metal and unexploded explosives. Carcinogenic components can contaminate the ground and possibly drinking water. Secondary ground contamination can occur through the transport of contaminants, and as rain or rivers infiltrate contaminated material into groundwater. Air pollution is a serious problem when burning explosives—one of the products of burning TNT is nitric oxide (NO_x), a major air pollutant. Levels of contamination depend on the quantity of neutralized ammunition and the duration of destruction operations.

Environmental aspects are also concerned with the degree to which components of the destroyed ammunition can be recycled. According to the NATO Maintenance and Supply Agency (NAMSA), some ammunition destruction companies claim to recycle 98% of materials, including metals, plastics and explosives.¹³

Techniques and facilities available

The techniques available for cluster munition stockpile destruction include open detonation, closed detonation, closed incineration, disassembly, cryofracture and harvesting of components.¹⁴ The decision to opt for any particular technique is likely to be based on cost, safety and environmental considerations, as well as the type of munition being destroyed.

Obviously the easiest and cheapest way to get rid of surplus ammunition is by sea dumping or landfill. This method is forbidden by law in those countries that have ratified the various related agreements and conventions.¹⁵ Dumping is not only very environmentally harmful, it also means that a government no longer has control over its still existing ammunition.

Open burning or detonation is widely used in countries where other facilities are not available. There are some obvious risks, such as uncontrolled pollution of the soil, groundwater and air, the possibility of explosive items remaining undestroyed, and the dangers caused by the shockwave and fragments from the explosions. Under some circumstances, this technique is the only option available, but it is not suitable for large-scale destruction of cluster munition stocks: the initiator shockwave is not strong enough to secure the destruction of all submunitions within a cluster munition. In addition, beyond a certain quantity, open burning or detonation is not an economical method: at the Berlin Conference on the Destruction of Cluster Munitions, Canada noted that, based on its experience with supporting destruction projects for anti-personnel mines, if approximately one million mines had to be destroyed, it became less expensive to use other technologies.¹⁶

Closed burning requires more technology, but is suitable for mass destruction of a great variety of ammunition if it is carried out in accordance with national environmental laws, particularly on emissions. Some munitions need to undergo a pre-treatment step before burning, for example the removal of the shaped charge cone, otherwise the ammunition would destroy the oven. Most of the companies specializing in cluster munition destruction use a combination of manual techniques and machines for disassembly prior to burning. However, these machines can normally only deal with one type of cluster munition. They have to be adjusted before a new type can be prepared for destruction.

There are a number of additional techniques that have been used for conventional ammunition destruction, for example water jet washout (which, as the name suggests, removes explosive fillings through a high-pressure water jet) or experimental conversion techniques. These are the most sophisticated methods—the aim is to convert explosive waste into harmless components through chemical or electrochemical reactions, or through biodegradation with the help

of micro-organisms.¹⁷ None of these techniques have yet been used for the destruction of cluster munitions.

There are relatively few companies in Europe that specialize in stockpile destruction of cluster munitions. NAMSA works with companies in France, Germany, Italy, Norway, Spain and the United Kingdom, but has also awarded contracts in Albania, Serbia and Ukraine through competitive tender on behalf of the NATO Partnership for Peace Trust Funds, and then monitored the destruction.¹⁸

Regional options and transfers

Not all states or regions of the world have specialized destruction facilities at their disposal. The requirements for new destruction facilities will need to be investigated. The CCM allows the transfer of cluster munitions for the purpose of destruction, so not every state has to have its own destruction facility, and there is an opportunity to find best market prices for destruction. However, it should be noted that cluster munitions for destruction can only be transferred to another CCM state party, which limits the market. For example, destruction companies in the United States, which have suitable technology for the destruction of cluster munitions, cannot at this stage be used. This clause also means also that recipient signatory states will have to authorize entities for the destruction of cluster munitions. Moreover, jurisdiction over the cluster munitions must be clear at every point in the transfer.

The process of transferring cluster munitions for the purpose of destruction will involve some administrative burden, such as the requirements stipulated in the CCM for detailed reporting on their planned and actual usage and the recording and tracking of lot numbers. There is relevant international and national legislation, which covers storing, handling, moving and processing of ammunition.

Norwegian People's Aid (NPA) and partners¹⁹ are examining regional options for cluster munition stockpile destruction in South-East Asia. The project, located in Cambodia, explores options to combine manual disassembly, mechanized processes and explosive or pyrotechnic destruction. The aim is to find destruction options that are safe, affordable, easily constructed, simple to maintain and operate, built using readily-available materials, and capable of sustaining high rates of output. If this can be achieved, the advantages are obvious: savings on transportation, local investment, and some community benefits through the reuse of materials.

Cost

The cost of cluster munition destruction depends on the amount and types of munitions to be destroyed and the technology chosen. So far, there is no comprehensive study on the cost of cluster munition destruction, but countries have reported some figures:

- Germany estimates the cost of its stockpile destruction at approximately €40 million;
- Japan estimates about €15 million for its stockpiles;
- Italy approximately €8 million;
- Spain €4.9 million;
- Austria €1 million;²⁰ and
- Norway counts €40 per projectile.

The United States has destroyed around 7,000 tons of cluster munitions per year over the past decade at an average annual cost of US\$ 6.6 million.²¹ NAMSA notes that, based on its experience, the destruction of a BL755 cluster bomb costs around €400, depending on the degree of recycling of materials.²²

Whatever the final figures amount to, it is clear that significant amounts of money have to be budgeted for the destruction of cluster munitions, if industrialized and environmentally friendly processes are used. During the Berlin Conference, a number of participants from governments, international organizations and non-governmental organizations (NGOs) pointed out that political will will be very important in committing to the financial cost of destruction.

International cooperation and assistance

The option for states parties to seek and receive assistance for the destruction of cluster munitions stockpiles, and the obligation of states parties to provide that assistance, if they are in a position to do so, is very important for the successful implementation of the CCM. It is of course first and foremost the responsibility of each state party to ensure the destruction of its own stockpiles within the eight-year deadline, but at the same time there is a collective responsibility for all states parties to facilitate the compliance of all with this obligation.

Assistance can be provided for both the development of national stockpile destruction plans and for the execution of those plans. Options for assistance include the provision of technical expertise—through military or other international experts, international organizations or NGOs, material support and financial assistance.

States parties in a position to assist others could use the funds and frameworks already established in the context of the Mine Ban Treaty, or they could explore options to establish a new fund specifically for the destruction of cluster munitions. The basic programming processes will essentially be similar to those of the Mine Ban Treaty. Generally, the managers of these funds do not have the technical expertise to directly develop and manage projects: in consequence, they would be likely to work with implementing partners. In the context of the Mine Ban Treaty, these have included ministries of defence, the United Nations, the Organization of American States (OAS), the Stability Pact for South Eastern Europe, NATO, the Geneva International Centre for Humanitarian Demining (GICHD), and NGOs. Fund managers should focus on establishing appropriate arrangements in cooperation with partners.²³

The first step for states parties planning to seek assistance is the preparation of an inventory of weapons for destruction. This is very important in order to get an overview of how many states will require how much outside help. Based on these figures, plans for cooperation can be developed not only on national, but also on regional and international levels. Considering the high cost of destruction, regional solutions are likely to make sense in some parts of the world.

Transparency

Paragraphs 1(e) and (f) of Article 7 require states parties to report to the Secretary-General of the United Nations as soon as practicable, but not later than 180 days after the entry into force of the CCM for that state party, on the status and progress of programmes for the destruction of cluster munitions, with details of the methods that will be used, the location of all destruction sites, the applicable safety and environmental standards to be observed, and the types and quantities of cluster munitions destroyed.

The information provided shall be updated by states parties annually not later than 30 April of each year,²⁴ and the Secretary-General then transmits the reports to all states parties.²⁵

Proper reporting is vital for any credible arms control or disarmament instrument. The fulfilment of this article is not only important for confidence-building, but will also help to identify and resolve problems anticipated or encountered in the implementation of the CCM in a timely manner, as it provides the opportunity to highlight technical, financial or procedural obstacles countries may face in their progress toward stockpile destruction, as well as the chance to learn from others' experience.

Article 7 reports could become a planning tool for all states parties, if types and quantities stockpiled, destruction methods and lessons learned during destruction are thoroughly recorded and reported. This is why it is particularly important to start the regular information feeding process from the very beginning of implementation.

As regards further transparency measures, Chile has highlighted the OAS Inter-American Convention on Transparency in Conventional Weapons Acquisitions, and the voluntary UN Register of Conventional Arms as models of regional/international transparency mechanisms.²⁶ NGOs have proposed to invite media and civil society organizations to witness destruction events (for example the first, last or millionth destroyed submunition).²⁷

Retention and acquisition of cluster munitions

Article 3(6) allows the retention or acquisition of cluster munitions for the following purposes:

- the development of and training in cluster munition and explosive submunition detection, clearance or destruction techniques; or
- the development of cluster munition countermeasures.

The quantity of cluster munitions retained for these purposes should be “the minimum number absolutely necessary”. It falls to each state party to determine what that number would be. It will be important to define the number of cluster munitions retained on a national level to allow for proper stockpile destruction planning. In this context, transparency and the application of criteria that can be understood by other CCM states parties will be vital.

Lessons learned from the Mine Ban Treaty

Even though the destruction of stockpiled cluster munitions is in many ways more challenging than the destruction of anti-personnel mines, a number of lessons can be learned from the implementation of the Mine Ban Treaty.²⁸

- Technical concerns should be addressed as early as possible, for example through regional expert meetings or informal exchange of information.
- Information on types and quantities of stocks should be made available by CCM states parties to the other CCM states parties and used as quickly as possible in order to focus on specific and quantified implementation challenges.
- States should effectively chart progress, identifying potential problems and taking steps to overcome them. This implies a focus on the task at hand—there is a risk that political and legal aspects will take over the implementation agenda, preventing fruitful technical exchange.
- The obligation to provide assistance should be taken seriously: not many states provided support for the destruction of mines, but for cluster munitions this will be necessary due to the cost and technical complexity of the task.
- States parties should work with partners with specific technical capacities and expertise (GICHD, NAMSA) or with those who can act as reliable intermediaries between donor states and national armed forces (OAS, United Nations Development Programme).
- States are encouraged to take advantage of the opportunity to transfer munitions for destruction, because it may prove to be a cheaper and easier solution.
- Implementing voluntary transparency measures beyond treaty obligations will build confidence and help to promote both the CCM and states parties' compliance with the CCM.

Conclusions

The destruction of cluster munitions in a safe, effective and environmentally-friendly manner is technically more complex than the destruction of anti-personnel mines, and the number of submunitions to be destroyed is also much higher than the number of landmines that had to be destroyed by states party to the Mine Ban Treaty. At the same time, fewer states have to fulfil the CCM stockpile destruction obligations than the Mine Ban Treaty obligations, and the majority of them are wealthy states. This allows for focused assistance.

Each of the various destruction methods available has advantages and disadvantages. Specialized destruction facilities are already established for NATO countries (and can be used by other countries), but the limited number of existing specialized companies will need to receive requests early to be able to respond—expansion requires significant investment and takes time.

In areas without established destruction facilities, alternative methods and combinations are being explored, but at this stage these techniques cannot deal with all types of cluster munition or large-scale stocks. The transfer of cluster munitions to other states parties for the purpose of destruction is an alternative, but this is costly and incurs an administrative burden. On a more positive note, experience shows that the recycling of components is environmentally friendly and reduces the cost of disposal. Nonetheless, some countries may require assistance for the establishment of a regional demilitarization factory,²⁹ or for the transportation of the cluster munitions to existing factories in other countries.

Transparency and proper reporting during the process of destruction will build confidence, facilitate planning, avoid bottlenecks in destruction, allow for lessons learned, and facilitate the creation of a network for international cooperation and assistance. The key to successful cluster munition stockpile destruction is political will and early national planning.

The next steps

To ensure the rapid destruction of cluster munition stockpiles, the first and immediate steps on a national level are:

- to make an inventory of the numbers and types of cluster munitions for destruction;
- to report the results from the inventory to the international community;
- to separate cluster munitions from the operational stocks; and
- to mark cluster munitions for the purpose of destruction.

The next steps are:

- to select the destruction technique suitable for the type of cluster munitions in the national arsenal, with the help of international experts as required; and
- to seek offers for destruction through competitive tender, if companies are to be used, or to identify and cooperate with other suitable partners.

To gain a comprehensive understanding of the scope of the task and the resources needed to complete it, governments should prepare and adopt a detailed national stockpile destruction plan covering deadlines, budgets, resource mobilization and technical and logistical concepts. This national planning process should start without delay. Early planning allows adequate time for the negotiation of international assistance agreements and facilitates the meeting of deadlines. To ensure full government support, it will be important for the national authorities in charge of destruction to engage parliamentarians in the planning process at an early stage.

For states parties to the CCM holding cluster munition stockpiles, the next national budget will have to include funds for cluster munition destruction.

States parties in a position to assist and support other states should:

- internally explore which funds (military, humanitarian) could be used and, as above, engage parliamentarians in the national planning process at an early stage to ensure budgeting for international assistance in the next national budget (this kind of planning could be linked with the CCM ratification process);
- support other states parties in developing and implementing national stockpile destruction plans by providing technical expertise, material support and/or financial assistance;
- explore methods of support—bilaterally, through international funds, or through international organizations or NGOs;
- make use of the technical expertise available in the international community, including international organizations and NGOs, and consider working through implementing partners; and
- establish appropriate contractual arrangements with partners.

On the regional and international level, consideration should be given to:

- supporting the development and implementation of national plans, including the development of a template for national planning, and researching hand-tailored solutions for destruction methods as well as costs for the quantity, type, place and budget available;
- developing a template for reporting on activities related to the destruction of cluster munitions;
- exploring the availability of destruction facilities for all regions and considering the establishment of regional destruction sites;
- considering organizing regional expert meetings to address technical concerns and to find synergies;
- developing international standards for cluster munition stockpile destruction;
- ensuring support mechanisms are available;
- considering the creation of an internet platform or using existing forums for informal technical exchange; and
- cooperating not only among states parties, but also with international organizations and NGOs, to make use of all the expertise available.

If states parties take the above-mentioned first and immediate steps effectively and without delay, and then follow-up with the next steps as described, they will be in a position to destroy the existing stockpiles of the CCM signatories within the 8-year time limit foreseen in the CCM.

Notes

1. CCM signatories in italics: Algeria, *Angola*, Argentina, *Australia*, *Austria*, Azerbaijan, Bahrain, Belarus, *Belgium*, *Bosnia and Herzegovina*, Brazil, *Bulgaria*, *Canada*, *Chile*, China, *Colombia*, *Croatia*, Cuba, *Czech Republic*, Democratic People's Republic of Korea, *Denmark*, Egypt, Eritrea, Estonia, Ethiopia, Finland, *France*, Georgia, *Germany*, Greece, *Guinea*, *Guinea-Bissau*, *Honduras*, *Hungary*, India, *Indonesia*, Iran, *Iraq*, Israel, *Italy*, *Japan*, Jordan, Kazakhstan, Kuwait, Libya, *Mali*, Mongolia, *Montenegro*, Morocco, *Netherlands*, *Nigeria*, *Norway*, Oman, Pakistan, *Peru*, Poland, *Portugal*, Qatar, Republic of Korea, *Republic of Moldova*, Romania, Russian Federation, Saudi Arabia, Serbia, Singapore, Slovakia, *Slovenia*, *South Africa*, *Spain*, Sri Lanka, Sudan, *Sweden*, *Switzerland*, Syria, Thailand, Turkey, Turkmenistan, *Uganda*, Ukraine, United Arab Emirates, *United Kingdom*, United States, Uzbekistan, Yemen, Zimbabwe. Data available at <www.stopclustermunitions.org/the-problem/countries>, provided by Human Rights Watch.
2. Human Rights Watch et al., 2009, *Banning Cluster Munitions: Government Policy and Practice*, Mines Action Canada, May, p. 20. Countries that are no longer thought to have stockpiles include signatories Australia, Honduras, Mali and Spain, and non-signatories Argentina and Iraq. The report notes on page i: "At this point, there is still a marked lack of official, publicly available information about the use, production, transfer, and stockpiling of cluster munitions."
3. For example Azerbaijan, Belarus, *Bosnia and Herzegovina*, *Croatia*, *Czech Republic*, Georgia, Kazakhstan, *Montenegro*, *Republic of Moldova*, Serbia, Turkmenistan, Ukraine and Uzbekistan (CCM signatories in italics).
4. For details of types, see Human Rights Watch et al., op. cit., p. 17.
5. NAMSA reported at the Berlin Conference on the Destruction of Cluster Munitions (all conference documents are available on the conference web site <www.berlin-ccm-conference.org>) that they have destroyed M42, M46, M77, BL755, JP233, CBU87, CBU Mk20 (Rockeye) and CBU89 cluster munitions on behalf of a number of countries (Peter Courtney-Green, "Technical Aspects of Cluster Munition Stockpile Destruction"). Germany reported at the same conference the destruction of MW-1, BL755, DM602, DM612, DM632, DM642 and DM652 submunitions (Thomas Frisch, "German National Stockpile Destruction Programme"). Argentina and Honduras have destroyed their stockpiles of Rockeyes, and Argentina has also destroyed BLG66 stocks (Human Rights Watch et al., op. cit., p. 21).
6. Article 3(2): "... Each State Party undertakes to ensure that destruction methods comply with applicable international standards for protecting public health and the environment."
7. The IMAS are available at <www.mineactionstandards.org>. The guidelines are issued and endorsed by the United Nations Mine Action Service and are the standards in force for all UN mine action operations. The aim of IMAS is to improve safety, quality and efficiency of mine action, and to build confidence. They become the basis for national mine action standards and standard operating procedures. The IMAS project is managed by GICHD on behalf of the United Nations. There is a continuous review process in place for extant IMAS, the development of new IMAS and an "outreach" support capacity to assist in the design of national mine action standards. International norms from the International Organization for Standardization, the International Labour Organization, and the European Committee for Standardization feed into IMAS on one side. On the other side, arms control and disarmament treaties like the Mine Ban Treaty or Protocols II and V of the Convention on Certain Conventional Weapons are relevant for IMAS.
8. The full list of Standardization Agreements is available at <www.nato.int/cps/en/natolive/stanag.htm>.
9. *OSCE Handbook of Best Practices on Conventional Ammunition*, Decision no. 6/08, 2008, Vienna.
10. *Report of the Group of Governmental Experts established pursuant to General Assembly resolution 61/72 to consider further steps to enhance cooperation with regard to the issue of conventional ammunition stockpiles in surplus*, UN document A/63/182, 28 July 2008, paragraph 72.
11. Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste, Official Journal of the European Communities L 332/91.
12. Presentation by Mario Burger, UNEP, to the 2009 Meeting of Experts to the States Parties to the Convention on Certain Conventional Weapons Protocol V, Geneva, 23 April 2009.

13. Peter Courtney-Green, NAMSA, "Technical Aspects of Cluster Munitions Stockpile Destruction", presentation to the Berlin Conference on the Destruction of Cluster Munitions, 25 June 2009.
14. For further descriptions of these techniques, see Geneva International Centre for Humanitarian Demining (GICHD), 2009, *A Guide to Cluster Munitions*, second edition, Geneva, pp. 54–56.
15. See The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), adopted 13 November 1972 and its 1996 Protocol; and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), adopted 22 September 1992.
16. LTC John MacBride, Senior Defence Officer, Department of Foreign Affairs Canada, "International Cooperation and Assistance", presentation to the Berlin Conference on the Destruction of Cluster Munitions, 25–26 June 2009.
17. For further details, see the *OSCE Handbook of Best Practices on Conventional Ammunition*, op. cit.
18. NAMSA has a list of companies it has cooperated with for the destruction of cluster munition stockpiles. More information can be found at <www.namsa.nato.int/services/demil_e.htm>.
19. NPA worked with C. King Associates and the Golden West Humanitarian Foundation. Colin King reported on the project in his presentation to the 2009 Berlin Conference on the Destruction of Cluster Munitions, "Regional Options for Stockpile Destruction". Colin King and Lee Moroney reported on a similar cluster munition disassembly and destruction project in the Republic of Moldova at "After Oslo 2008: Seminar on Cluster Munitions", held 8–11 February, Bestovje, Croatia.
20. These figures are of limited value in calculating the cost of destruction, because it is not clear how many submunitions they refer to.
21. Figures taken from Human Rights Watch et al., op. cit., p. 21.
22. Peter Courtney-Green of NAMSA is cited in the report of the Sofia Regional Conference on the Convention on Cluster Munitions: The Way Forward, held 18–19 September 2008.
23. During the Berlin Conference, Canada offered assistance for countries seeking advice on establishing programmes, based on its experience with the implementation of the Mine Ban Treaty. A useful source of knowledge on this area is GICHD's *A Guide to Contracting in Mine Action* (Geneva, 2009).
24. Article 7(2).
25. Article 7(3).
26. Matias Undurruga Abbott, Deputy Director, International Security of the Ministry of Foreign Affairs, Chile, "Reporting", presentation to the Berlin Conference on the Destruction of Cluster Munitions, 25–26 June 2009.
27. Mark Hiznay, Human Rights Watch, "Stockpiling and Destruction of Cluster Munitions: A Global Overview", presentation to the Berlin Conference on the Destruction of Cluster Munitions, 25–26 June 2009.
28. Kerry Brinkert, Director of the Anti-Personnel Mine Ban Treaty Implementation Support Unit, "Lessons Learned from the AP Mine Ban Convention for the Destruction and Retention of Cluster Munitions in Accordance with the Convention on Cluster Munitions", presentation to the Berlin Conference on the Destruction of Cluster Munitions, 25–26 June 2009.
29. A demilitarization factory could be designed to deal with different types of ammunition and thus support the goal to address the problem of surplus conventional arms in a comprehensive manner.