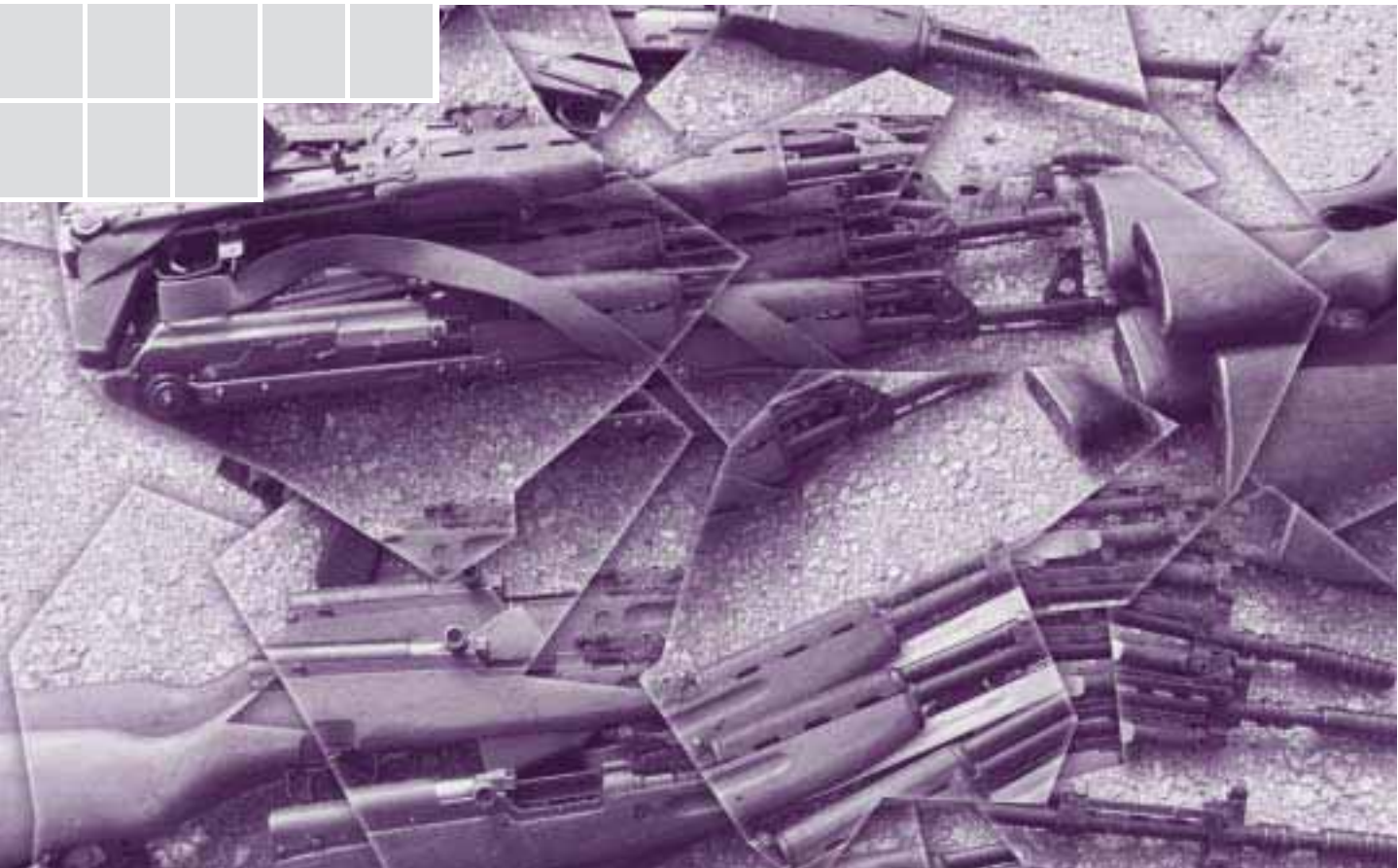
OSCE

Handbook of Best Practices
on Small Arms and Light Weapons

Best Practice Guide on National Procedures for the Destruction of Small Arms and Light Weapons



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I. Introduction

1. Aim

The purpose of this guide is to provide information and analysis for developing policy and designing general guidelines and procedures for the destruction of Small Arms and Light Weapons (SALW)[1] from the time of identification for destruction until the final disposal of scrap material.

2. Scope

The guide sets out the reasons for destruction; lists methodology considerations for techniques and procedures; highlights various destruction methodologies, including cost estimates where appropriate; provides a suggested template for planning purposes; notes appropriate umbrella commercial organizations involved in, or available for, demilitarization activities regarding SALW (Annex A); and contains a synopsis of additional general references (Annex B). While the destruction of ammunition and explosives is an important aspect of SALW demilitarization, it is not discussed herein. Some aspects of SALW munitions destruction are discussed in the references noted below.

3. General References

There are a number of references dealing with SALW destruction. In addition to the SALW information exchange returns submitted by OSCE participating States, two primary references and several secondary sources were used in preparing this guide. The two primary sources are general references only, useful for assisting policy makers and those involved in the operational implementation of a SALW destruction programme. They must be supplemented by detailed standard operating procedures and other official technical manuals and instructions, including safety manuals, developed by individual State authorities, departments and agencies and private companies for the disposal of SALW. See Annex B for a summary of the two primary references.

[1] The OSCE Document on Small Arms and Light Weapons (SALW) (FSC.DOC/01/00), 24 November 2000, categorizes SALW as follows: weapons intended for use by individual members of armed or security forces that include revolvers and self-loading pistols, rifles and carbines, sub-machine guns, assault rifles, and light machine guns; and crew served light weapons intended for use by several members of armed forces or security forces that include heavy machine guns, portable anti-tank guns, recoilless rifles, portable launchers of anti-tank missile and rocket systems, portable launchers of anti-aircraft missile systems, and mortars or calibres less than 100mm (Preamble, footnote to paragraph 3).

II. Reasons for Destruction

The OSCE Document on Small Arms and Light Weapons provides a guideline for identifying surplus SALW[2] and notes that "the participating States agree that the preferred method for the disposal of small arms is destruction […] and, if their disposal is to be effected by export […] export will only take place in accordance with the export criteria set out in Section IIIA, paragraphs 1 and 2 of this document."[3]

Legal State and privately initiated destruction of SALW is carried out for numerous reasons. The primary reasons for destruction include:

- Surplus military stock whose retention is not required as war stocks or mobilization stock due to obsolescence or a change in defence requirements;
- Surplus military stock that should not or cannot be warehoused, sold or transferred to foreign markets or domestic dealers due to the nature of the weaponry or for security/legal/political concerns, be they domestic or international;[4]
- New surplus SALW stock held by State or private companies, not yet issued to security forces, that cannot or should not be warehoused, sold or otherwise distributed due to the nature of the weaponry or for security/legal/political concerns;
- SALW seized by security forces (police, paramilitary, or military), confiscated in the context of criminal/terrorist/insurgent activity or otherwise illegal possession in accordance with the recognized laws of the State, which should not be sold or otherwise used due to the nature of the weaponry or for security/legal/political concerns;
- SALW that for technical reasons are beyond reasonable repair or have inherent flaws that make them unsuitable for their intended use; and finally
- SALW to be destroyed within the context of peace-keeping/enforcement operations and post-conflict disarmament, demobilization and reintegration (DD&R) programmes, for political, economic and security reasons beyond those outlined above. Destruction in this context may reflect requirements included in a peace-keeping/enforcement mandate or peace accord agreement and often involves an international organization such as the UN, OSCE, or NATO.

[2] OSCE Document on SALW, *op. cit.,* Section VI(A).

[3] *Ibid.,* Section IV(C), paragraph 1.

[4] Security/political concerns may be broadly interpreted to include: domestic, foreign state, regional and international instability involving hostilities or the threat of hostilities; criminal or terrorist concerns; and public health concerns as legally defined within a national, regional or international context.

III. Methodology Considerations

Destruction or demilitarization must render the SALW totally inoperable and non-repairable even by a skilled armourer or gunsmith. Furthermore, parts that could be used for spares or in the making of new weapons should also be destroyed. The process must be safe and should be efficient and repeatable. With this in mind, there are a number of factors to consider when selecting any given destruction procedure. These include but are not limited to the factors outlined below.

• **Quantity:** The quantity of SALW to be destroyed will have a significant impact on the choice of destruction method. For the destruction of large quantities of SALW, particularly if they are concentrated in only a few locations, on site destruction may be desirable. Procedures more conducive to cost-effective destruction may warrant transportation to a recycling ferrous shredding depot or, if stripped of all non-ferrous material, to a large steel mill. Small quantities of SALW at numerous locations might best be destroyed by use of cutting torches and carbide saws. Cost-recovery based on metal recycling is more likely to be achieved with larger quantities due to economies of scale.

• **Type of SALW:** The type of SALW to be destroyed will affect the choice of method for several reasons. Some light weapons, as well as heavy conventional weaponry, will probably require initial disabling and preparation for destruction disposal through the use of cutting devices such as oxy-acetylene torches.[5] Small arms, such as handguns, could be easily destroyed using light presses or even sledgehammers and anvils.

• **Location:** If SALW are located at only a few locations and/or numerous locations but in small quantities, it may be more cost-effective to destroy them on-site. On site destruction may mitigate certain security issues.

• **Security:** The OSCE Best Practice Guide on stockpile management and security should form the basis of any security assessment. A threat assessment must be conducted and security measures incorporated that reflect the threat assessment conclusions and recommendations. Appropriate security measures must be incorporated at all stages – collection, storage, transportation, destruction and disposal.

• **Time constraints:** Other than in some peace-keeping/enforcement operations and in the context of DD&R, time constraints are seldom an issue. Where they are, they may be an overriding factor and can often be associated with security concerns.

• **National infrastructure:** The distance between SALW sites, the quality and quantity of transportation

[5] For an example of methods and standards for destroying larger weapons such as light artillery see: Treaty on Conventional Armed Forces in Europe, Protocol on Procedures Governing the Reduction of Conventional Armaments and Equipment Limited by the Treaty on Conventional Armed Forces in Europe, Section V: Procedures for the Reduction of Artillery by Destruction..

routes, the locations of SALW relative to major destruction and recycling sites, and the quantity and quality of transportation vehicles will often be significant factors in deciding what method of destruction to use and where it should be carried out.

• **Means available:** Some States or areas may not have access to large ferrous recycling shredders or steel mills, or distances may be too great. Others, because of cheaper labour costs, may find labour intensive methods more cost-effective than methods requiring large capital investments.

• **Implementation funds:** If safety is an operational primary concern, then available funding can certainly impact on the quantity of SALW to be destroyed. The means of destruction is frequently dictated by the money available to conduct it. Every factor mentioned in this section has a cost connection. Costs generally centre around labour, equipment capital costs, and service costs. To this end, tables one and two provide guidance in this matter. It is important to try and offset these costs through cost-recovery or cost-neutralization where possible. Cost-benefit analysis in this area is prone to subjectivity and non-quantifiable or speculative variables.

• **Political requirements:** Political requirements, including the requirement for transparency, may have an impact on time constraints. For domestic and/or international reasons it may be appropriate to invite the press or other suitable outside organizations to observe the destruction activities in order to enhance confidence and transparency.

• **Safety:** Safety is always a determining factor. The only instances where a marginally less safe alternative might be considered would be for broader overriding security concerns. Safety goes beyond checking to see if the magazines and breeches contain ammunition. Depending on the procedural technique to be used, it could involve ensuring that springs under tension are released, excess oil and lubricants are removed, and ancillary equipment such as batteries and target acquisition and target enhancement parts containing tritium and other such materials are removed. Safety should also be taken into account when considering other elements in the process, including the operation of destruction equipment, transport, storage and final disposal.

• **Record-keeping:** The OSCE Best Practice Guides on stockpile management and security, and marking, record-keeping and tracing, should form the basis of record keeping procedures. Thus record-keeping should be a continuum based on requirements to track SALW, and should already be in place at the time of SALW identification for destruction. The primary reason to keep destruction records is for destruction verification to ensure there has been no leakage.

• **Legal, accounting and management requirements:** These requirements can be externally imposed or self-imposed. These considerations can be examined closely for cost-effectiveness and necessity. The following hypothetical case illustrates these kinds of considerations. If SALW identified for destruction at warehouse X consist of 10,000 assault rifles, and a ferrous shredder is available to destroy them completely, then the following considerations would impact on the legal, accounting and management requirements:

- Can the weapons and ancillary equipment, which may weigh about 50 metric tons, be

transported directly in five secure covered trucks to the site for immediate destruction (2.5 hrs to destroy all weapons)?
- If they can, is it necessary to perform any redundancy through disabling prior to shipment?
- Assuming the warehouse accounting books are accurate, can the trucks be loaded using the accounting books to check the serial numbers as the final accounting procedure?
- If the trucks are enclosed with steel side walls and a removable covered secure top, what kind of security is required assuming the ferrous shredder (government or private) is ready to accept delivery for destruction on arrival?
- Assuming the feed for the ferrous shredder is a magnetic or claw crane device for lifting the weapons off the truck and into the shredder (i.e. it does not have to be hand fed), is it necessary to once again confirm serial numbers and/or weapons counts?
- Would a sweep of the immediate area and a check of the resulting scrap be sufficient to meet security standards regarding the possibility of loss or diversion, accidental or deliberate?
- How many agencies and how many checks are realistically required to implement this procedure ensuring adequate security and safety?

• **Environmental impact:** Some destruction techniques are more ecologically sound than others. By and large, there are no apparent procedures practised domestically by OSCE participating States that raise serious environmental or ecological concerns with regard to SALW destruction and disposal. Disposal of SALW ammunition is a greater concern from this standpoint, but is not the subject of this chapter. It is safe to say that non-flame cutting or smashing devices are probably the most sound ecological processes to use with eventual recycling in steel mills. Cutting torches are marginally less environmentally friendly but are not a serious problem. Dumping at sea, while discussed as an option in the UN Manual on SALW Destruction Methods,[6] is not a legal option for most OSCE States.

• **Recycling and cost recovery possibilities.** All things being equal, efforts should be directed towards cost-recovery or cost-neutralization to help offset the expense of destruction. Providing security concerns are met, tendering of destruction to commercial companies may be the most cost-efficient way to get rid of unwanted SALW. If this is not feasible, the sale of disabled SALW directly to foundries may be an alternative. Again, economies of scale may provide a better price. While uncontaminated metal will draw a higher price, the cost to achieve it must be considered against the price received for the scrap. Regardless of whether the enterprise contracted is a commercial or State owned company, a proper contractual agreement with security safeguards is required to ensure there is no leakage or theft for spare parts.

[6] A Destruction Handbook: Small Arms, Light Weapons, Ammunition and Explosives, published by the UN Department for Disarmament Affairs and based on Report of the Secretary-General to the United Nations Security Council on "Methods of Destruction of Small Arms, Light Weapons, Ammunition and Explosives" (S/2000/1092), 15 November 2000, p.15.

IV. Destruction Methods

There are destruction methods that are suitable for any contingency, and any quantity and type of SALW. The choice of methods is contingent upon the factors listed under methodology considerations. Both of the general references used in preparing this chapter list the various methods available and to some degree, provide case studies, and note advantages and disadvantages of the various processes. In essence the choices centre around a number of well established methods. Tables 1, 2 and 3 place the destruction methodologies into similar comparative groupings. These comparisons are subjective, simplistic and general, and may not apply in all circumstances. Operator skill, type and composition of SALW, site organization, labour costs, security, urgency and whether the equipment is custom built or off the shelf are the primary but not sole determinants of the assertions. Where provided, costs are given in US dollar estimates. For further details on various destruction procedures, users of this guide should refer to Report of the UN Secretary General on Methods of Destruction of Small Arms, Light Weapons, Ammunition and Explosives (See Key References below).

Table 1 lists methods generally applicable to States or areas involved in conflict or emerging from a post-conflict situation, where the infrastructure may be poor, funds may be lacking and requirements of speed and security are paramount. They may also be applicable for situations where transparency and confidence-building are required. In these situations, environmental concerns may be subordinated to security concerns. To ensure that parts are not reused or that a weapon cannot be reconstituted from spare parts, open burning, explosion and vehicle crushing should be followed by burying (preferably in a secure guarded site or buried so deep and covered as to make recovery non-cost effective) or ferrous shredder recycling, depending on funds and infrastructure.

Table 1 Low Cost and Field Expedient Techniques
Selected Comparative Characteristics

Characteristics	Open-Pit Burning	Open-Pit Detonation	Crushing by Vehicles	Land Burial
Safety concerns. Assume properly trained personnel and SALW proofed.	Low – depends on combustion material.	High if non-EOD personnel used. Moderate for EOD if HE munitions used.	Low.	Low.
Environment and ecological issues.	Moderate depending on fuel.	Low to moderate depending on explosives used.	No.	Possible low level soil contamination.
Capital cost.	Low – fuel costs only.	Expensive – can be reduced if tied to commensurate munitions destruction.	Low – cost of operating/leasing suitable vehicle (bulldozer).	Low – cost of hole (heavy equipment lease).
Operating cost per weapon. No Labour.	A few cents each.	See above.	A few cents each.	A few cents each.
Skill Level.	Low.	High for EOD skills.	Low.	Low.
Infrastructure.	Low.	Low.	Low.	Low.
Destruction efficiency.	Each SALW should be checked post burn – depends on heat generated.	Very effective if properly executed.	Fair. Leaves useable parts. All SALW should be checked in case another attempt is required.	Concerns unless destroyed prior. Could be buried in cement which makes retrieval difficult.

Notes: Open-pit detonation can be expensive in terms of explosive material and the skill level required. Without smelting or storage in a permanently secure site there is always the potential that some parts could be used later

EOD = Explosive Ordnance Disposal; HE = High Explosives

Table 2 below lists methods best applied to smaller quantities of SALW to be destroyed in numerous locations. It is applicable to both destruction prior to disposal in a benign peacetime setting and to destruction in a less secure and more difficult DD&R setting. For States seeking redundancies in SALW security, the Table 2 procedures are sometimes used prior to shredding and/or melting in blast furnaces.

Table 2[7] Common Cutting Techniques
Selected Comparative Characteristics

Characteristics	Oxy-Acetylene	Oxy-Gasoline	Plasma	Shears	Saws (various)
Speed per weapon.	30 – 60 seconds.	15 – 30 seconds.	15 – 30 seconds.	2 – 10 seconds.	30 – 90 seconds.
Safety concerns.	Low – user burns and explosion.	Very low – user burns, minimal explosion.	Torch burns only.	Cutting blade user only.	Cutting blade user only.
Toxic fumes depends on SALW composition.	Minor – laminates and synthetics that burn or puddle.	Minor – as for oxy-acetylene.	Cuts synthetics, doesn't burn. Less than oxy torches.	No.	No.
Capital cost.	$200 to $500.	$800 to $1,200.	$2,500 to $5,000.	$10,000 to $20,000.	$400 to $1,000.
Operating cost per weapon. No labour.	Ten to twenty cents.	Five to fifteen cents.	Five to ten cents.	A few cents each.	Five to twenty cents.
Skill level.	Moderate.	Moderate.	Moderate.	Low for user.	Low for user.
Portability.	100 to 200 kg with tanks.	25 to 70 kg with tank.	100 to 200 kg no generator.	1500 to 4500 kg no generator.	25 to 75 kg no generator.
Power requirements.	None.	None.	Electricity 220/380/415 volts.	Electricity 220/380/415 2/3 phase.	Electricity 110/220 volts.

Notes: All amounts are in US dollars.

[7] See Report of the UN Secretary General on Methods of Destruction, op. cit., p. 33. This table was produced by the author for that report.

Table 3 below lists those methodologies best used for destroying large quantities of SALW, and for final disposal of SALW destroyed as outlined in Table 2 or 3, or as a single disposal effort without an intermediary procedure.

Table 3 Bulk Destruction and Final Disposal Techniques
Selected Comparative Characteristics

Characteristics	Giant Ferrous Shredder	Compactors/Shears	Smelter Furnace	Dumping at Sea[8]
Speed per weapon.	3-4000 an hour.	Variable – many hundreds per hour.	Varies. This is a final disposal method. Prior dismantling is required and in most cases prior disabling unless a shredder is used.	N/A
Safety concerns.	Normal.	Normal operator procedures.	Normal.	N/A
Environmental and ecological concerns.	Nil, providing hazardous materials removed.	Nil, providing hazardous materials are removed.	Nil, providing hazardous materials are removed.	Must conform with conventions including Law of the Sea. Probably not feasible for most OSCE countries.[9]
Capital cost.	Must use a commercial/state shredder in existence. Too expensive other wise.	Variable – depends on size and whether done commercially. See Table 2.	Fixed commercial or state smelter. No investment or lease cost.	Variable. Cost of sea containers and transport.
Skill level.	Low for SALW authority.	See Table 2.	None for SALW authority.	Moderate.
Cost recovery.	Yes, depending on level of contamination and pricing variables.	Eventually if recycled.	Yes.	None.

[8] This procedure is covered in detail in the Report of the UN Secretary General on Methods of Destruction, *op. cit.,* p.15.

[9] The EU Sstates and other OSCE Sstates have signed, among other similar agreements, the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo, 1972, entry into force 1975), now superceded by the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, 1992, entry into force 1998); and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, (London, 1972, entry into force 1975). These conventions forbid the dumping at sea of military items.

Some States use a reverse assembly line procedure to reduce SALW to their essential parts. The process usually involves the crushing, bending or cutting of some key components during the process. While this is labour intensive, time consuming and requires a factory setting with capital investment in carbide saws and smaller presses, it has the advantage of spare-part recovery for replenishment purposes where necessary, and ensures an end product that is more attractive to recycle depots and steel mills as it should be relatively contamination free and alloy separated. This procedure may best be used at actual manufacturing installations and large central depots.

A review of all the methodologies available suggests that where possible, the one time destruction of SALW using giant ferrous shredding machines is the most cost-effective method of destroying large quantities. In some cases, it would be the preferred method for destroying smaller quantities of SALW. Commercial firms, if approached on an individual basis, may claim that the procedure costs them money (safety and security concerns along with disruption of work programme), and at best may offer to do the job gratis for the scrap, or at worst actually charge a fee for destruction. To this end, such concerns may be offset through the calling of tenders (competitive bidding) or bulk destruction. Bulk destruction offers distinct economies of scale. With this in mind, OSCE participating States could consider joint one-time destruction efforts. Most OSCE participating States have commercial ferrous shredders located within their borders and where they do not commercial shredders may be available in nearby States. Annex B contains additional information to this end.

V. Procedural considerations

To some degree the procedures already in place for stockpile management, storage and transport security will effect the management of destruction procedures. If stockpile management and security (whether war reserve stocks, operational stocks, or seized, confiscated or returned SALW) are lacking, then destruction management may become more difficult to implement properly. Furthermore, each State must comply with its own laws and regulations. Some States, particularly those of a federal nature, may have to account for differences in laws and responsibilities at municipal, state/provincial and federal levels of government and jurisprudence.

The design and implementation of a management template will normally have a serious impact on the cost of implementing a destruction program. The procedures involved in the destruction of SALW, from identification to final destruction and disposal, including verification, involve most of the same factors outlined under Methodology Considerations (Section III). In fact, the management requirements might dictate the destruction technique in some instances.

Table 4 provides a check list for managing a SALW destruction system. It is a non-specific generic check list that would have to be modified somewhat to fit the requirements (legal, regulatory, and political) of individual States. This check list contains many redundancies; some procedures may be unnecessary and the order of the steps may be changed depending on requirements. While there can be no compromise on the premise that destruction or demilitarization must render the SALW totally inoperable and non-repairable with parts unavailable for non-authorized use, unnecessary redundancies can add significant costs. Often, "the better can become the enemy of the good."

Table 4 Management Check List for SALW Destruction

Steps	Measure	Comments
1.	**Select** SALW to be destroyed.	Based on State regulations, laws, procedures, policies and accepted practices.
2.	**Identify holding authorities** for SALW and jurisdictional requirements.	Military, police, commercial, etc.
3.	**Identify locations.**	Depots, stations, factories, etc. Number and quantity held by type.
4.	**Record identification**: Means of identification including what requires recording, how it is to be recorded (hard copy, computer) back-up [recording redundancies], who verifies the records.	Identify by type, model, serial number, and calibre. In addition and in conjunction with step 1 there may be a requirement to state the reason for destruction and the authority for destruction.
5.	**Safety Checks** (includes hazardous materials check). Safety checks may require some redundancies depending on the method of destruction i.e. checks may have to be made on initial movement/collection and at the destruction site itself.	This may require more than check to see if the magazines and breeches contain ammunition. Depending on the procedural technique to be used it could mean ensuring that springs under tension are released, excess oil and lubricants are removed, ancillary equipment such as batteries and target acquisition/enhancement parts containing tritium and other such materials are removed.
6.	**Collection**: Decision based on step 3.	Centralized versus dispersed – variables are secure storage, available destruction plant, type of SALW, transportation and transportation security.
7.	**Tendering to commercial or state firms**.	This cost-recovery or cost-neutralization procedure could be taken prior to centralized collection, post centralized collection, prior to initial disabling or post-initial disabling. A security, verification and certification agreement is essential.
8.	**Initial disabling**: This is a redundancy that should be avoided if possible. It could be a cut, bend or crush procedure. If destined for a foundry it could entail the removal of non-metallic parts. The removal of non-metallic parts if going to a shredder is not necessary and the work involved might not be worth the cost-recovery enhancement for non contaminated material.	Legal and security concerns may require initial disabling prior to shipment to central holding or destruction/disposal facility. If initial disabling is required then a record check for each SALW and subsequent disabling verification certification may be required.

Steps	Measure	Comments
9.	**Transport to final destruction.**	Normally this would be to a final destruction site. If already disabled generally security can be lower and separate shipment of pieces is not necessary. Type of vehicles, recovery procedure, security requirements (convoy vs. individual vehicles and covert vs. overt security) must be considered.
10.	**Final destruction.**	If this is a one-step process it could be any of the procedures mentioned in Table 1 to 3. For large quantities of SALW, shredding would be the preferred method.
11.	**Final Disposal:** If final destruction is indeed final, with no value for reconstituting, even for useful spare parts, then security should be a minimum of concern.	Disposal would normally be a foundry but could be a landfill or temporary storage site.
12.	**Record retention**	A decision on what records should be retained, the purpose of retention, for how long, in what type of media and where they should be held is required.
13.	**Verification:** Usually verification involves a dual signature at a responsible authority level at each stage of transfer.	Whether a serial number count is required along with each verification stage must be carefully considered. Over bureaucratization will add to costs and time delays. It may be preferable to have representatives from various agencies accompany the process continuously.
14.	**Quality Assurance/Control.**	This is an ongoing procedure that constantly looks at ways to improve the destruction process through efficiencies and the elimination of potential problems. In this regard after-action reports can sometimes help the process.

Planners must take into consideration all factors when designing a destruction programme for a given state and a given situation. If it costs more to transport material than it does to recover costs through recycling then alternative destruction and disposal methods may be a consideration. In general, the more developed a state and the more secure it is, the more destruction and recycling lends itself to the use of shredding and/or direct recycling (after removal of non-ferrous parts) at steel mills. Some States may have low labour costs, but this is often offset by poor infrastructure and the requirement to use more cumbersome procedures. The greatest constraints on achieving cost-efficiencies may be over bureaucratization of the destruction procedure through duplication, over centralization, unnecessary security, failure to creatively pursue cost-recovery, and numerous fail-safe redundancies.

VI. Conclusions

Determining which SALW are surplus to requirements and how to dispose of them is the responsibility of each State, taking into consideration the factors outlined at the beginning of the chapter. There are numerous techniques available for destroying SALW for any given situation. The choice of technique necessitates a decision based on a number of methodology considerations, which form the basis for a management plan.

Most OSCE participating States that have SALW within their borders have procedures in place for their destruction, whether in small or large amounts. This guide will provide additional information and ideas that may assist States in enhancing the effectiveness of current procedures and/or achieving cost-savings.

Annex A
Recycling Using Ferrous Shredders[10]

Introduction

Recycling of SALW through shredders has a long history that has shown it to be the most cost-efficient, effective and environmentally friendly way to dispose of SALW, particularly large quantities. Assuming a relatively secure environment, destruction can be a rapid, one-step process with the added benefit of some cost recovery through the purchase of the shredded materials by the recycling depot. It is a method that deserves the attention of State authorities responsible for destroying SALW stock.

General information

Details of ferrous shredder locations and the tendering of bids or issuing of contracts for the recycling of SALW can be obtained from the sources noted in the endnotes to this Annex. There are some 220 shredders operating in Europe, and a large number in Canada and the USA. Most shredder activity is directed towards the recycling of end-of-life vehicles, but with a few exceptions most shredders can quite easily accommodate the destruction of SALW.

At one time the introduction of non-ferrous material through shredders would significantly lower the prospects of any cost recovery. Today, many recycling depots that use large shredders have a sophisticated separating process which can sometimes lead to cost recovery from certain non-ferrous material. In the words of the European Shredder Group,

> "The European ferrous scrap industry has achieved a high level of recovery (re-use and recycling) 75 percent by weight of a car is recycled...due to shredder technology. The 25 percent left over (including 4 percent dust/mud) which used to go to landfills as waste, is increasingly being recovered both for its metal content (by Media Separation Plant processing) and for its calorific value as fuel. The volume going to landfill continuously decreasing..."

Media Separation Plants

There are over 40 media separation plants located in Europe that separate non-magnetic material into a separate product. Thus, some plastics, among other products, are recycled. With regard to final steel recycling, most shredder depots sort and clean the material for the steel industry into very small pieces, making it desirable for fast furnace charging.

[10] The contents of annex B are derived from a number of sources. For further information see World Federation-Bureau of International Recycling, http://www.bir.org/; European Ferrous Recovery and Recycling Federation (EFR) http://www.efr2.org/ and European Metal Trade and Recycling Federation http://users.skynet.be/EUROMETREC.ORG/. It also includes the contents of correspondence with Mr. Ross Bartley, Environmental and Technical Director of the World Federation-Bureau of International Recycling.

Cost-Recovery

Prices for scrap metal are subject to a number of variables, some of which are negotiable. Sometimes the price, or lack thereof, may be a function of the tendering or contract system used by a given authority. Unique variables dealing with SALW may centre on security requirements, verification requirements, safety requirements and, of course, the type and quality of SALW from a recycling perspective. With this in mind, it is often best to negotiate a one time large delivery (economies of scale) that can be immediately processed without unduly affecting the recycling operation of the plant.

Mobility

There are mobile ferrous shredders available for purchase, lease or through direct contract for on-site destruction. The resulting scrap would still have to be moved. Such an operation may be suitable for large depots with railheads and in instances where security may be a concern.

Locations

The following OSCE participating States are known to have large ferrous shredders capable of destroying SALW: Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Russia, Serbia and Montenegro, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the USA.

Annex B

References

Key references

For a general overview of SALW destruction in terms of case studies and methodologies, *Destroying Small Arms and Light Weapons* (David deClerq, Bonn International Center for Conversion report number 13, April 1999, http://www.bicc.de/weapons/report13/content.html). provides a wide range of information. The report examines the issues and methodologies regarding the destruction of light weapons, small arms and ammunition, primarily within the context of peace building operations in a post-conflict society. Firearms collection and destruction conducted within the scope of domestic firearms regulations in some selected countries are also addressed, with a view to providing useful considerations and guidance for similar actions not only in post-conflict situations but also in domestic efforts to destroy surplus military weapons and seized illegal weapons. Several post-conflict situations where collection and destruction of weapons were carried out either by the State, NGOs and citizens groups, or an outside third party, are also analyzed for lessons learned. A review of current destruction methodologies and available technologies is undertaken and appropriate destruction considerations including possible roles for commercial participation are discussed. Lastly, a number of recommendations are made.

The Report of the UN Secretary-General to the Security Council on Methods of Destruction of Small Arms, Light Weapons, Ammunition and Explosives, (S/2000/1092, 15 November 2003, http://ods-dds-ny.un.org/doc/UNDOC/GEN/N00/747/29/PDF/N0074729.pdf?OpenElement), which draws to some extent on the BICC Report, provides a more comprehensive examination of various destruction procedures and methodologies. The report provides guidance for the production of a reference field manual on environmentally sound methods of SALW destruction, including related ammunition and explosives (see the UN Department for Disarmament Affairs publication entitled *A Destruction Handbook: Small Arms, Light Weapons, Ammunition and Explosives,* available at http://disarmament.un.org/ddapublications/desthbk.pdf.). It contains an overview of issues related to destruction, and a number of conclusions and recommendations. The Handbook is focused more on field destruction within a DDR scenario, but it nevertheless has value for smaller scale destruction within a more benign domestic setting. It does not address in any detail large-scale SALW destruction and demilitarization conducted by national governments. Users of this Handbook should refer to the UN Report for destruction procedure details.

Additional references

1. *Treaty on Conventional Armed Forces in Europe, Protocol on Procedures Governing the Reduction of Conventional Armaments and Equipment Limited by the Treaty on Conventional Armed Forces in Europe (CFE Treaty),* (1990). Signed at Paris on 19 November 1990. Section V: Procedures for the Reduction of Artillery by Destruction.

2. World Federation-Bureau of International Recycling: <http://www.bir.org>

3. European Ferrous Recovery and Recycling Federation (EFR): <http://www.efr2.org>

4. European Metal Trade and Recycling Federation: <http://users.skynet.be/EUROMETREC.ORG>.