



Verification Division
S/166/2000
15 February 2000
ENGLISH only

NOTE BY THE TECHNICAL SECRETARIAT

**PROPOSED VERIFICATION MEASURES FOR
OLD CHEMICAL WEAPONS PRODUCED
BETWEEN 1925 AND 1946**

1. Introduction

Following informal discussions with delegations, the Technical Secretariat (hereinafter the “Secretariat”) is issuing this Note, which sets out its provisional approach to the verification measures to be applied to old chemical weapons, with a view to facilitating further consultations on the unresolved issues pertaining to old chemical weapons.

2. Overview

- 2.1 In defining old chemical weapons, Article II, paragraph 5 of the Convention makes a clear distinction on the basis of the production date of those chemical weapons: chemical weapons produced before 1925 are therefore considered old chemical weapons, and are excluded from the normal obligations under Article IV of the Convention and Part IV(A) of the Verification Annex, and treated and disposed of as toxic waste, under Part IV(B) of the Verification Annex.
- 2.2 Referring to chemical weapons produced between 1925 and 1946, paragraph 5 of Article II of the Convention specifies that only those which have “deteriorated to such an extent that they can no longer be used as chemical weapons” meet the definition of old chemical weapons.
- 2.3 However, the Convention does not provide any criteria concerning when a chemical weapon may be regarded as having deteriorated to the extent that it cannot be used as originally intended. Part IV(B), paragraph 5 of the Verification Annex states that “guidelines to determine the usability of chemical weapons produced between 1925 and 1946 shall be considered and approved by the Conference, pursuant to Article VIII, paragraph 21(i).”

- 2.4 Since the entry into force of the Convention seven States Parties - Belgium, France, Germany, Italy, Japan, Slovenia, and the United Kingdom of Great Britain and Northern Ireland - have submitted declarations of old chemical weapons on their territory. Only four of these States Parties - Germany, Italy, Japan, and the United Kingdom of Great Britain and Northern Ireland - declared old chemical weapons produced between 1925 and 1946, located at 20 sites (at present only 11 of these sites remain inspectable). Amendments regarding new discoveries and, in some instances, plans and reports concerning the destruction of the declared items, have also been submitted by some of these States Parties. The Secretariat has conducted 11 initial inspections and 5 further inspections at these sites.
- 2.5 The lack of agreed guidelines for usability has prevented the closure of all 16 inspection reports from initial and further inspections conducted so far at declared 1925 - 1946 old chemical weapons (OCW) storage sites. This has also prevented the generation of an appropriate and consistent verification regime for chemical weapons produced between 1925 and 1946, including their destruction. The same also applies to the files pertaining to 11 initial and further inspections for abandoned chemical weapons declared as produced between 1925 and 1946 in China. This matter has been highlighted in reports and opening statements by the Director-General to various sessions of the Executive Council.
- 2.6 In addition to this, the Secretariat has noted differences in the way in which individual States Parties understand the declaration requirements with regard to old chemical weapons. Specifically, of the four States Parties which have made declarations on old chemical weapons produced between 1925 and 1946, only two - Italy and the United Kingdom of Great Britain and Northern Ireland - have submitted their general plan for destruction, and, on a regular basis, detailed annual plans for, and reports on, the destruction of the declared items. The Secretariat is therefore unaware of the progress achieved in the destruction of declared old chemical weapons in those other States Parties which have declared OCW.

3. The role of the usability guidelines

- 3.1 One of the aims of the initial inspection conducted at a declared OCW site is to gather information in order to confirm whether the chemical weapons meet the definition of old chemical weapons as specified in Article II, subparagraph 5(b) of the Convention. This activity is of a purely technical nature, and involves the technical assessment of the degree of deterioration of the chemical weapons (munitions, devices and equipment specifically designed for use), as well as an assessment of the concentration by weight of the toxic chemicals and precursors stored in bulk on the basis of the results, where practicable, of chemical analysis.
- 3.2 To facilitate this task, criteria and factors to determine the usability of chemical weapons (munitions, devices and equipment) have been developed by the Secretariat, as well as a system which fully records and reports on each assessment which is made

(see annex 1 to this Note). These criteria and factors take into account the practical experience gained during inspections conducted over the two and a half years since the entry into force of the Convention at more than 20 separate old and/or abandoned chemical weapons sites in eight States Parties.

- 3.3 Information collected during on-site inspections should form the basis for a decision to be taken by the Secretariat as to whether these weapons meet the definition of OCW, on the basis of the guidelines to determine usability. In accordance with paragraph 5 of Part IV(B) of the Verification Annex, "Guidelines to determine the usability of chemical weapons produced between 1925 and 1946 shall be considered and approved by the Conference pursuant to Article VIII, paragraph 21(i)". However, despite protracted discussions, there is currently no agreement on what makes a chemical weapon unusable.
- 3.4 An agreement on the usability guidelines has not been achieved among States Parties due primarily to two concerns. These concerns relate to the degree to which bulk toxic chemicals must have deteriorated before they can be considered unusable, and to the question of how small the quantities involved must be before they can no longer be considered to pose a risk of use. Although chemical weapons are defined in terms of their toxic effects, it was, however, generally considered to use the concentration by weight of the original toxic material as the sole criterion for determining the usability of toxic bulk chemicals. A common position has yet to be reached on a figure for the lower cut-off point for considering bulk chemicals a risk.
- 3.5 The usability of chemical weapons produced between 1925 and 1946 will determine the regime to be further applied to the items involved. For those chemical weapons produced between 1925 and 1946 for which it has been decided that they do not meet the definition of old chemical weapons contained in Article II, subparagraph 5(b) of the Convention, the regime will be subject to the requirements set forth in Article IV of the Convention and Part IV(A) of the Verification Annex in relation to their declaration, verification and destruction. The verification measures for those chemical weapons which have been confirmed by the Secretariat as meeting the definition of old chemical weapons in Article II, subparagraph 5(b), will be determined by an assessment of the risk which they pose to the object and purpose of the Convention, and will be subjected to a much more flexible regime.
- 3.6 In the absence of an agreement on the issue of approved guidelines to determine the usability of chemical weapons produced between 1925 and 1946 it is the Secretariat's intention, until such time as the Council adopts a decision on this issue, to provisionally implement the draft guidelines which are at present under consideration in informal consultations (see annex 2 to this Note).

4. Verification measures for chemical weapons meeting the definition of old chemical weapons in Article II, subparagraph 5(b) of the Convention

- 4.1 The approach presented in this Note with respect to the verification regime to be applied to chemical weapons meeting the definition of old chemical weapons in Article II, subparagraph 5(b) of the Convention, is based on the experience gained by the Secretariat through on-site inspections conducted at chemical weapons and old and abandoned chemical weapons sites over the past two and a half years. This approach takes into account the concept of risk as it pertains to an old/abandoned chemical weapons site, and, in the view of the Secretariat, applies a balanced and flexible verification regime.
- 4.2 The proposed verification regime is strictly in accordance with Part IV(B) of the Verification Annex. The general rules for verification contained in Part II of the Verification Annex have been also taken into consideration. To the extent provided for in Part IV(B), and as appropriate, the basis for declaration, verification and destruction has been derived from Part IV(A) of the Verification Annex, and also takes account of proposals in this regard made by States Parties and the Secretariat.

A. Declaration requirements

- 4.3 A State Party which has on its territory chemical weapons meeting the definition contained in Article II, subparagraph 5(b) of the Convention shall submit to the Secretariat, not later than 30 days after the Convention enters into force for it, a declaration pursuant to Article III, subparagraph 1(b)(i), of the Convention.
- 4.4 The declaration will include, to the extent possible, the information specified in Part IV(A), paragraphs 1 to 3, of the Verification Annex. Moreover, reference to specific production dates or periods, and the substantiation of the reasons for declaring particular chemical weapons as old chemical weapons should, to the extent possible, also be included in the declaration.
- 4.5 The "location" in the formats for declaring old chemical weapons means the location for the purposes of verification, i.e. the location of the storage area/facility if the old chemical weapons are moved to such a place, or the location of the place of discovery, if the old chemical weapons are not removed from their place of discovery. If the old chemical weapons have been removed from the place of discovery to a storage area, their original location of discovery may also be provided on a voluntary basis.
- 4.6 The declaration of old chemical weapons discovered after the Convention enters into force for the State Party which is due under paragraph 4 of Part IV(B) of the Verification Annex can be consolidated within the 180-day period after the discovery of old chemical weapons. In such cases a State Party is required to submit the information specified in subparagraph 4.4 above.

- 4.7 The provisions of subparagraph 4.6 above will also apply in cases when, for example, for safety reasons, individual items of newly discovered old chemical weapons are destroyed in situ without delay. The destruction of such discovered old chemical weapons should be documented appropriately for reporting in the consolidated declaration (not later than 180 days after they have been discovered). Evidence of their discovery and of their physical/technical condition that should be submitted to the Secretariat includes photographs and/or videotapes regarding the discovery and destruction of the items in question. Technical drawings of the discovered munitions should also be included, if available.
- 4.8 Land-disposed old chemical weapons are not required to be declared if they were disposed of before 1 January 1977, provided that they remain buried. Once such old chemical weapons are recovered, for environmental reasons, for example, the provisions of Part IV(B) of the Verification Annex shall apply.
- 4.9 Sea-dumped old chemical weapons disposed of before 1 January 1985 are not required to be declared. If, however, old chemical weapons are washed ashore, or are retrieved from the sea after having been dumped before 1985, the provisions of Part IV(B) of the Verification Annex will apply.
- 4.10 If land-disposed or sea-dumped old chemical weapons were disposed of after the cut-off dates provided in the Convention, they will be subject to all relevant provisions of the Convention, including the need for declaration, etc.
- 4.11 For old chemical weapons as defined in Article II, subparagraph 5(b) of the Convention, a State Party is under obligation, inter alia, to:
- (a) provide its general plan for the destruction of old chemical weapons, in accordance with the requirements of paragraph 6, Part IV(A), VA;
 - (b) submit detailed annual plans for the destruction of old chemical weapons not later than 60 days before each annual destruction period begins, in accordance with paragraph 29, Part IV(A), VA. Such detailed annual plans shall encompass all stocks to be destroyed during the next annual destruction period;
 - (c) submit declarations annually regarding the implementation of its plans for the destruction of old chemical weapons (annual reports on destruction), not later than 60 days after the end of each annual destruction period, in accordance with paragraph 36, Part IV(A), VA; and
 - (d) provide, for each of its destruction/disposal facilities for old chemical weapons, detailed facility information, in accordance with paragraphs 30 - 32, Part IV(A), VA.

B. Initial inspections at OCW storage sites

- 4.12 In accordance with paragraph 5 of Part IV(B) of the Verification Annex, the Secretariat will conduct an initial inspection, and any further inspections as may be necessary, in order to verify the information submitted by the inspected State Party.
- 4.13 The purpose of initial inspections at old chemical weapons storage sites shall be:
- (a) to verify the information submitted by the inspected State Party pursuant to paragraphs 3 and 4 of Part IV(B) of the Verification Annex;
 - (b) to gather information in order to determine whether the chemical weapons meet the definition of old chemical weapons specified in Article II, subparagraph 5(b) of the Convention; and
 - (c) to collect information in order to determine whether any further inspections or alternative verification activities may be necessary in order to clarify ambiguities or to address issues requiring further attention.
- 4.14 The initial inspection of sites holding old chemical weapons will be undertaken as soon as possible after the entry into force of the Convention for the State Party.
- 4.15 The Secretariat will prioritise the planning and launching of initial inspections on the basis of an initial assessment of the risk to the object and purpose of the Convention of individual declared sites which has been derived from the information provided in the State Party's declaration (types, quantities, condition, and accessibility of the old chemical weapons).
- 4.16 A declared storage facility should be accessible to the OPCW inspection teams at any time for the purpose of confirming the information submitted by the State Party in its declaration.
- 4.17 For the purposes of verification, the inspection of old chemical weapons will take place at the declared location. The declared location may be the storage area/facility if, after recovery, the old chemical weapons have been moved to such a place. Declared temporary holding areas at old chemical weapons recovery sites, or temporary holding areas at old chemical weapons destruction/disposal facilities, may also be subject to inspection.
- 4.18 The inspection may take place at the point of recovery if the old chemical weapons have not been removed. In such situations the inspection of old chemical weapons will usually take place once some or all of the munitions at the declared site have been recovered. Where a partial recovery has occurred, the inspection will be limited to those munitions that have been recovered. The inspection team will not conduct any estimates of remaining buried chemical weapons at a site.

- 4.19 When moved to a storage site, old chemical weapons discovered after the entry into force of the Convention shall be inspected as part of any further inspection activities scheduled for that particular storage site.
- 4.20 When the inspection takes place at a location other than the point of recovery, the inspection team may, in exceptional circumstances, request access to the point of recovery. This could be necessary, for example, in situations where the point of the recovery might provide supporting evidence related to the date of production of the old chemical weapons.

C. Initial inspections at OCW destruction/disposal facilities/sites

- 4.21 Pursuant to paragraph 7 of Part IV(B) of the Verification Annex, old chemical weapons meeting the definition contained in Article II, subparagraph 5(b) of the Convention shall be destroyed by the State Party in question in accordance with Article IV of the Convention and Part IV(A) of the Verification Annex.
- 4.22 In the view of the Secretariat it would be most logical for destruction facilities declared as dedicated to the destruction/disposal of old chemical weapons produced between 1925 and 1946 to receive an initial inspection as early as possible.
- 4.23 The purpose of such initial inspections at old chemical weapons destruction/disposal sites would be to verify the declared destruction process, and to confirm the identity and quantity of the items being destroyed, in accordance with the general and annual plans for destruction and reports on destruction.

D. Further inspections of OCW storage sites

- 4.24 Further inspections at OCW storage sites can be foreseen in the following circumstances:
- (a) if inspection aims could not be fulfilled during the initial inspection at a declared site. If the storage conditions, health and safety concerns, time constraints, or other factors, prevent a detailed inventory and verification of the declared items, further inspections may be needed to verify the information submitted by the State Party in its initial declaration;
- (b) if amendments to the initial declaration are submitted due to new findings of OCW. A State Party is required to submit to the Secretariat, in accordance with paragraph 4 of Part IV(B) of the Verification Annex, additional information on the recovery of new items of old chemical munitions/bulk chemicals and their subsequent transfer from the place of their recovery to a declared storage site for OCW. After receiving any such amendments the Secretariat shall conduct an inspection to verify the information submitted. However, such inspections will be conducted in a manner which will minimise costs, and on a case-by-case basis, given that it may not be feasible to inspect very small quantities of newly recovered items each time an amendment to the national declaration is made by a State Party, as mentioned in subparagraph 4.19 above;

- (c) if there are other declared changes to the site inventory notified by a State Party (due to the destruction process, the re-evaluation of declared items, etc.); and
- (d) if the Secretariat's assessment of the usability and the risk to the object and purpose of the Convention posed by the declared items justifies, in its view, a further inspection. For the purposes of this subparagraph it is assumed that the declared items have been confirmed by the Secretariat as meeting the definition of old chemical weapons in Article II, subparagraph 5(b) of the Convention, on the basis of the use of the guidelines and criteria presented in this Note. However, additional factors may still justify further verification activities at a site which has already received an initial inspection, even if there has been no notification of any changes to the site inventory. These factors could include the lack of evidence of an appropriate destruction programme, a large amount of OCW present at the site, or items which, although determined to be unusable, nevertheless have a lesser degree of deterioration or a greater ease of repair.

4.25 The purpose of such further inspections will be:

- (a) to confirm the State Party's amendment to the initial declaration or any other notifications in relation to changes in the site inventory;
- (b) to ensure that no process has been conducted or activities undertaken with the declared items to modify their status, except for purposes exclusively related to destruction operations;
- (c) to ensure that no items have been removed from the site except for the purposes of the destruction or consolidation of items. Transfers from small temporary storage facilities to larger storage sites or destruction/disposal facilities/sites shall be notified to the Secretariat in amendments to the declaration; and
- (d) to ensure that the items are being destroyed in accordance with the State Party's declared destruction plan.

E. Further inspections of OCW destruction/disposal facilities/sites

4.26 The verification of the destruction of old chemical weapons produced between 1925 and 1946 will be carried out on the basis of general and annual plans provided in accordance with the relevant provisions of Part IV(A) of the Verification Annex and Article III, subparagraph 1(a)(v) of the Convention.

4.27 The suggested verification measures provided by a State Party in accordance with paragraph 31 of Part IV(A) of the Verification Annex as part of the detailed facility information will, upon agreement with the Secretariat, represent the basis for future verification activities at the facility. The Secretariat will ensure that the application of such verification measures is consistent with the facility operation and with the

assessment of the risk posed to the object and purpose of the Convention by that particular site.

- 4.28 For the verification of the destruction of old chemical weapons the Secretariat would not apply the requirements for the verification of destruction through continuous on-site monitoring with the physical presence of inspectors and/or instruments during the destruction period(s).
- 4.29 The verification of old chemical weapons destruction would instead be performed through the ad hoc on-site inspection of OCW present at the site, and through an examination of destruction records, transport and storage records and other available documentation which will be matched with the annual reports on destruction submitted to the Secretariat by the State Party in question.
- 4.30 Inspections performed during active destruction periods should, however, be granted the opportunity to observe the destruction process. These destruction periods will be known to the Secretariat through the annual destruction plans submitted by the State Party.
- 4.31 Inspections of this type would, to the extent practicable, be conducted in conjunction with further inspections of collocated old chemical weapons storage sites.

5. Verification measures for chemical weapons not meeting the definition of old chemical weapons in Article II, subparagraph 5(b) of the Convention

If, as a result of the “usability” assessment, the chemical weapons produced between 1925 and 1946 do not meet the definition of old chemical weapons contained in Article II, subparagraph 5(b) of the Convention, the requirements set forth in Article IV of the Convention and Part IV(A) of the Verification Annex will apply fully in relation to the declaration, verification and destruction of such chemical weapons.

Annex 1

**Working Operating Procedure
Verification Division
Office of the Director of Verification**

**DRAFT
CRITERIA AND FACTORS TO DETERMINE THE USABILITY OF
CHEMICAL WEAPONS PRODUCED BETWEEN 1925 AND 1946**

**WOP 020
January 2000**

I. Introduction

1. In accordance with paragraph 5 of Part IV(B) of the Verification Annex, guidelines to determine the usability of chemical weapons produced between 1925 and 1946 have to be considered and approved by the Conference of the States Parties, pursuant to Article VIII, subparagraph 21(i) of the Convention. Such guidelines are to be complemented by criteria which will address the degree of deterioration of munitions, devices and equipment specifically designed for use in connection with the employment of munitions and devices.
2. For chemical weapons produced between 1925 and 1946 the definition of old chemical weapons contained in Article II, subparagraph 5(b) of the Convention, is based on the understanding that there is a distinct and recognisable point which separates "usable" from "unusable" chemical weapons, at which the latter become old chemical weapons. The extent to which a chemical weapon has deteriorated is clearly the key factor in determining whether it is usable or not. The assessment of the degree of deterioration of a chemical weapon, on the basis of the criteria and factors presented below, should be an activity of a purely technical nature, and may be undertaken on the basis of the criteria and factors presented below.
3. These criteria and evaluation factors will also facilitate the inspection teams' task of collecting information on the present condition of chemical weapons produced between 1925 to 1946 during on-site inspections at declared OCW and abandoned chemical weapons sites.

II. The approach

4. The definition of "chemical weapons" in paragraph 1 of Article II of the Convention covers the following, together or separately:
 - (a) toxic chemicals and their precursors, except where intended for purposes not prohibited under the Convention, as long as the types and quantities are consistent with such purposes;
 - (b) munitions and devices specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph 1(a) of Article II, which would be released as a result of the use of such munitions and devices; and
 - (c) equipment specifically designed for use in connection with the use of munitions and devices specified in subparagraph 1(b) of Article II.
5. The criteria and factors referred to below relate only to munitions, devices and equipment specifically designed for the delivery of the toxic chemical (chemical agent) to a target. The assessment of the degree of deterioration is not dependent on facts such as location, storage conditions and configuration, quantity, potential for

modifications to render the items usable in other ways, and of other circumstantial or historical facts which may be relevant to a risk assessment.

6. The overall assessment of any munition may involve the “usability” evaluation of several criteria/factors, each of which should be examined separately. For example, there might be no damage and no missing components, but the munition might contain hazardous explosive salts.
7. The individual munition is rated by “usability” points given to each factor. A factor receiving 1 or 2 points is considered usable, whereas more than 2 points is considered unusable. The average of all factors for the weapon indicates its “usability”. If, however, any single factor rates an evaluation of 5, the weapon will be considered unusable, irrespective of the ratings of other factors. For technical reasons, not all factors are equal. Thus, some are not capable of a 5 rating. While a munition receiving a rating of 3 or 4 is to be considered unusable, that rating indicates a higher technical possibility of repair and use, however unlikely it may be. This information is applicable to the eventual risk assessment of the storage site.
8. A factor requiring special attention will be the indication of whether or not the munition is leaking chemical agent. This is considered as a limited evaluation factor for technical reasons. Leakage is typically due to some sort of damage, and is a criterion which has already been evaluated, and which may render a weapon unusable. From a technical standpoint, leakage alone does not render a weapon unusable. The leakage may be due to a simple factor, and the weapon may be easily decontaminated and repaired. While a State Party may have safety regulations prohibiting the use of such a hazardous item, this does not of itself rule out the technical possibility of its usability. Any chemical weapon which displays leakage will receive a usability rating, for this factor, of 3. This places weight on the side of unusable, while requiring other damage factors to maintain that assessment. Munitions which are either not leaking, or which are contaminated but not leaking, will receive an evaluation of 1 for that factor as usable.
9. Additional conditions may exist which make the handling of OCW and associated components extremely hazardous, and could seriously affect their usability. This includes dud munitions with fuze components still installed, and munitions known to incorporate explosives with the potential to form sensitive explosive salts or crystals over time. These conditions could make such munitions extremely dangerous to use or even move, thus removing any possibility of usability. Dud munitions containing original fuzing or fuze components will be considered unusable. Munitions which may be verified through reliable documentation as containing picric acid or other sensitive explosives forming crystals or salts will also be considered unusable.

III. Definition of terms

9. **Components:** many munitions are made up of several smaller pieces, some of which are easily replaced, and some of which are not. A fuze is a replaceable component, as

are rocket motors, some fins, propellant, and ignition cartridges. Rotating (driving) bands are one example of a component which is not considered replaceable. Simple damage to a replaceable component should not necessarily be a determining factor in relation to usability, and the same should apply to a lack of replacement components. There must be careful consideration of what is the primary portion of the munition, and what is an easily replaced component. Components of munitions which have been used (i.e. fired, dropped, etc.) may not normally be replaced.

10. **Corrosion:** the oxidation of the external parts of the body and components of a munition gradually wear away the material. Corrosion appears to varying extents, from a light layer not affecting usability, to a heavy pitting layer which weakens the structure of the munition and eventually entirely eats its body, causing leakage.
11. **Deformation:** a (deformed) misshapen or disfigured munition. Heavy pressure, impact, or attempts to destroy a munition by use of explosives, may change its shape, deforming it. It is possible that a munition fired from a gun barrel may no longer fit into it if the munition is even slightly deformed. Rockets and mortars will not fly correctly if they are deformed. However, a bomb may still be used, albeit with limited effectiveness, even if it is deformed.
12. **Dud:** a munition which was fired, dropped, etc. and which failed to function as intended upon impact/delivery to the target is potentially very dangerous due to the possibility of the presence of an armed fuze. A dud munition with the fuze removed, if not deformed, and if in excellent condition, could possibly be used again, although its effectiveness would be doubtful.
13. **Misfired:** a munition for which there has been a failed attempt to fire it, resulting in no delivery of, or damage to, the munition. In most cases a misfired munition could be repaired/refitted and used again. The term "misfired" should not be confused with "dud".
14. **Leakage:** an opening in the main body of the munition, allowing chemical agent to escape. This may be attributable to a number of factors, but in pre-1946 munitions the most likely sources are corrosion and/or deformation. Simple leakage/contamination should be seen as a possible indicator of damage, and not as a distinguishing characteristic of usability itself.
15. **Usability:** for the purposes of this working operating procedure (WOP), usability is defined strictly as the technical decision concerning whether or not a CW munition manufactured between the years of 1925 and 1946 could be used as a chemical weapon, assuming the availability of the necessary components and means of delivery. This definition of usability will therefore rely solely on the physical condition of the munition itself, as determined through the use of this WOP. A usable chemical weapon is capable of being delivered to (fired at, dropped on, etc.) a target, with a reasonable likelihood of functioning as designed when it reaches the target.

16. **Criteria for usability:** those considerations on the basis of which usability is determined. They include a number of factors, each of which carries individual weight. For the purposes of this WOP two criteria apply - damage, and missing components.
17. **Usability factors:** those considerations which contribute to the determination of usability. For the purposes of this WOP they include the specific technical features of the different types of chemical weapons. Individual usability factors have different weightings.
18. **Usability points:**-the method of measuring the degree and standing of each factor, in relation to an individual chemical weapon. For the purposes of this WOP a munition receiving an average rating of 1 or 2 is considered usable. A rating of above 2.0 is considered unusable. Usability points will initially be used to determine the usability of a single chemical weapon, and will later be averaged and used to assist in the calculation of the risk assessment of a site.

IV. Criteria for usability

19. **Damage criteria.** Damage is the injury or harm which has occurred to the CW, reducing its usefulness to the point where it is no longer suitable for use as a weapon. Damage may appear in several different ways, most of which fall into the following usability evaluation categories: corrosion, and deformation. Certain types of damage may be much easier to repair than others. Light corrosion may be quickly fixed through sanding and the application of paint, while deep corrosion and pitting may be capable of repair. Likewise, fins may be straightened, damaged threads may be repaired, and replaceable components such as fuzes can be removed and exchanged for new ones. More difficult areas to repair could include damage to rotating/driving bands and fuze threads, and the deformation of non-replaceable munition body parts. Ease of repair should not take into account the lack of replacement parts, as this is not something verifiable. The damage factors and the usability rating scheme are contained in appendix 1 to this WOP.
20. **Missing components criteria.** Chemical weapons may include numerous components, which, while necessary for the proper functioning of the weapon, may be either stored separately, easily replaced, or of a dual use at the time of manufacture. While the munition may not be capable of use without the presence of these components, it is not possible to verify the availability of replacement parts. As such the evaluation of the presence of these components carries less weight than the evaluation of certain damage criteria. The single exception to this is the loss of the rotating/driving band, which receives a rating of 5. Missing component factors and a usability rating scheme are contained in appendix 2 to this WOP.

Appendix 1
DAMAGE CRITERIA FOR USABILITY

1. Damage criteria are assessed through usability factors which are rated on a usability scale of one to five, with one being a weapon considered usable with no repair being necessary, and five being a weapon considered unusable, of which it is assumed that repair and use are obviously not possible. All factors are not considered equal, as some weapons components are easily repaired, fabricated, or substituted for dual use items. Such factors will be evaluated with a maximum rating of 3. The greatest weight is placed on factors involving sections and components integral to the munition, i.e. on those which are most difficult to repair or replace. In most cases a munition's rating of 5 in certain factors will result in a total rating of 5, regardless of other factor ratings.
2. Items not receiving a qualifying rating of 5 as above will have their ratings averaged. A munition with an average rating of 1 or 2 will be considered a usable munition, with all applicable requirements. A munition with a rating above 2.0 will be considered an unusable munition, with the scoring used as a factor in the risk assessment of the storage site.
3. Damage usability factors are specified by the type of damage, and then by the type of weapon. The usability factors, and the rating of usability points, are as follows:

3.1 Corrosion category for usability

Usability Point	Substance of Usability Point
1	<u>Little or no corrosion.</u> No repair necessary
2	<u>Light to moderate corrosion.</u> Little/moderate repair necessary, easily performed.
3	<u>Moderate corrosion.</u> Munition must be repaired if use is intended. Repairs time consuming, not easily performed. Corrosion over approximately 50% of munition body, some pitting, or damage to rotating bands/obturators. May require replacement of components such as fins, suspension devices, etc.
4	<u>Heavy corrosion.</u> Extensive damage to munition body, associated components. Deep pitting, damage to fuze well, rotating band, etc. May have agent leakage. Requires replacement of components such as fins, suspension systems, fuze adapters, or rocket motors. Repair possible, but unlikely.
5	<u>Severe corrosion.</u> Use not possible due to deep pitting, weakened structure. May have agent leakage. Fuze well damaged beyond repair. If fuze installed damage prevents removal and replacement. Large portions of rotating band and components seriously damaged/missing. No possibility of repair or use.

A. Corrosion Category Usability Form

Usability Factor	Usability Points	Score	Remarks
Projectiles			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Rotating band	1 2 3 4 5		
Filling plugs	1 2 3		
Fuze adapter	1 2 3		
Leakage	1 3		
Total score			
Mortars			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Rotating band/gas checks/obturator	1 2 3 4 5		
Filling plugs	1 2 3		
Fins/tail booms	1 2 3		
Leakage	1 3		
Total score			
Bombs			
Integral fuze wells or adapter wells	1 2 3 4 5		
Munition body	1 2 3 4 5		
Filling plugs	1 2 3		
Fins/stabilizing devices	1 2 3		
Fuze adapters	1 2 3		
Suspension devices/lifting lugs	1 2 3		
Leakage	1 3		
Total score	1 3		
Rockets			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Filling plugs	1 2 3		
Fuze adapter	1 2 3		
Motor/nozzles	1 2 3		
Leakage	1 3		
Total score			

Miscellaneous Devices						
Integral fuze wells or adapter wells	1	2	3	4	5	
Munition body	1	2	3	4	5	
Filling plugs	1	2	3			
Critical components	1	2	3	4	5	
Fuze adapters	1	2	3			
Leakage	1		3			
Total score						

3.2 Deformation category for usability

Usability Point	Substance of Usability Point
1	<u>Little or no deformation.</u> No affect on delivery of particular weapon. No repairs necessary.
2	<u>Minor deformation.</u> Light dents on ogive of projectiles, slight flattening/damage to rotating bands. Bent fins, dented bomb bodies. Damage may be repaired easily.
3	<u>Moderate deformation.</u> Munition must be repaired if use is intended. Damage to fuze wells requires repair before fuzes may be installed. May require replacement of components such as fins, suspension systems, fuze adapters, or rocket motors. Repairs time consuming, not easily performed.
4	<u>Heavy deformation.</u> Extensive damage to munition body, associated components. Repair possible, but unlikely. Deep dents to bombs, damage to fuze well, rotating band, etc.. Cracks may be visible in munition body, components. May have agent leakage. Requires replacement of components such as fins, suspension systems, fuze adapters, or rocket motors. A fired projectile may be considered to have heavy deformation to the rotating/driving band, with other deformation possible.
5	<u>Severe deformation.</u> Use not possible due to deep dents, cracks, weakened structure. Projectile may be out of round, not able to fit into barrel. May have agent leakage. Fuze well damaged beyond repair. If fuze installed damage prevents removal and replacement. Large portions of rotating band and components seriously damaged/missing. No possibility of repair or use.

B. Deformation Category Usability Form

Usability Factor	Usability Points	Score	Remarks
Projectiles			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Rotating band	1 2 3 4 5		
Filling plugs	1 2 3		
Fuze adapter	1 2 3		
Leakage	1 3		
Total score			
Mortars			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Rotating band/gas checks/obturator	1 2 3 4 5		
Filling plugs	1 2 3		
Fins/tail booms	1 2 3		
Leakage	1 3		
Total score			
Bombs			
Integral fuze wells or adapter wells	1 2 3 4 5		
Munition body	1 2 3 4 5		
Filling plugs	1 2 3 4 5		
Fins/stabilizing devices	1 2 3		
Fuze adapters	1 2 3		
Suspension devices/lifting lugs	1 2 3		
Leakage	1 3		
Total score			
Rockets			
Integral fuze well or adapter well	1 2 3 4 5		
Munition body	1 2 3 4 5		
Filling plugs	1 2 3		
Fuze adapter	1 2 3		
Motor/nozzles	1 2 3		
Leakage	1 3		
Total score			

Miscellaneous Devices						
Integral fuze wells or adapter wells	1	2	3	4	5	
Munition body	1	2	3	4	5	
Filling plugs	1	2	3	4	5	
Critical components	1	2	3	4	5	
Fuze adapters	1	2	3			
Total score						

Appendix 2

MISSING COMPONENT CRITERIA FOR USABILITY

1. Missing component criteria are assessed through usability factors which are rated on a usability scale of one to five, with one being a weapon considered usable with no repair being necessary, and five being a weapon considered as unusable whose repair and use is obviously not possible. All factors are not considered equal, as some weapons components are easily repaired, fabricated, or substituted for dual use items. These factors will be evaluated with a maximum rating of 3. The greatest weight is placed upon factors involving sections and components integral to the munition, those most difficult to repair or replace. In most cases a munition's rating of 5 in certain factors will result in a total rating of 5, regardless of other factor ratings.
2. Items not receiving a qualifying rating of 5 as above will have their ratings averaged. An average rating of 1 or 2 will be considered a usable munition, with all applicable requirements. A rating above 2.0 will be considered an unusable munition, with the scoring used as a factor in the risk assessment of storage sites.
3. Component evaluation factors are specified by the type of component, and then by the type of weapon. The factors and rating of evaluation points are as follows:

Usability Point	Substance of Usability Point
1	Component is present
2	Not used
3	Component is absent (component of lower factor weight)
4	Not used
5	Component is absent (rotating/driving bands)

C. Missing Components Usability Form

Usability Factor	Usability Points	Score	Remarks
Projectiles			
Fuze adapter	1 3		
Rotating band	1 5		
Filling plugs	1 3		
Total score			
Mortars			
Fuze adapter	1 3		
Rotating band	1 5		
Filling plugs	1 3		
Fins/tail booms	1 3		
Bombs			
Fuze adapters	1 3		
Filling plugs	1 3		
Fins/stabilizing devices	1 3		
Suspension devices/lifting lugs	1 3		
Total score			
Rockets			
Fuze adapters	1 3		
Filling plugs	1 3		
Motor/nozzles	1 3		
Total score			
Miscellaneous Devices			
Fuze adapters	1 3		
Filling plugs	1 3		
Critical components	1 5		
Total score			

Annex 2

DRAFT
PROPOSED GUIDELINES FOR DETERMINING
THE USABILITY OF CHEMICAL WEAPONS
DECLARED AS OLD CHEMICAL WEAPONS

Guidelines for determining the usability of chemical weapons produced between 1925 and 1946 as required by Part IV(B), paragraph 5, of the Verification Annex:

(1) *For toxic chemicals and their precursors:*

- (a) a toxic chemical or precursor present at a concentration by weight of 5%, or less, of that of the original toxic chemical or precursor is unusable as a chemical weapon;
- (b) toxic chemicals and their precursors which have been either removed from munitions or devices, including munitions and devices which have been deemed unusable, and which have been kept at a temporary storage area of a facility for the destruction of old chemical weapons, or which are stored in bulk at such a place for the purposes of destruction, and which exceed the 5% threshold referred to in subparagraph 1(a) above, are also deemed unusable as chemical weapons, provided the total weight of such toxic chemicals or precursors never exceeds the lower of either:
 - (i) the equivalent of two week's declared design destruction capacity of the facility; or
 - (ii) 300 kg;
- (c) the determination of usability, when the toxic chemical or precursor has not been removed from the munitions or devices, shall be on the basis of the condition of the munitions or devices;

(2) *For munitions and devices:*

munitions and devices which are corroded, deformed, leaking, misfired, or sustaining other physical damage to an extent sufficient to prevent use, are unusable as chemical weapons

- (3) *For equipment specifically designed for use directly in connection with the employment of munitions and devices:*

equipment specifically designed for use directly in connection with the employment of munitions and devices and which is corroded, deformed or sustaining other physical damage to an extent sufficient to prevent use, is unusable as a chemical weapon;

- (4) if, for the purposes of determining usability in accordance with subparagraph 1(b) above, a solvent is used to assist in removing a toxic chemical or precursor from a munition or device, the solvent so employed shall not contribute to the residual concentration of the toxic chemical or precursor. The residual concentration shall be the percentage of the weight of the toxic chemical or precursor prior to the removal from the munition or device of the total weight of the contents of the said munition or device. If necessary, these weights may be calculated or extrapolated from other measurements; and
- (5) for the purpose of implementing subparagraph 1(b)(i) above, the design destruction capacity of the facility shall be communicated to the Secretariat, and shall be ascertained during the initial inspection of the site.