

BEIGIUM

Proposed definition of a chemical warfare agent and chemical munitions

I. Definition of a chemical warfare agent

In attempting to define the attributes which constitute a chemical warfare agent, one may apply a number of criteria, none of which, however, proves sufficient in itself. On the contrary, it appears essential to resort cumulatively to all these criteria in order to be able to delimit as precisely as possible the concept of a chemical agent.

(a) Criteria for efforts to establish a definition

1. General purpose.

In accordance with this criterion, a chemical warfare agent is any chemical substance used because of its toxic properties against man, animals or plants. This criterion therefore implies the intention to use for hostile purposes the toxic effects of certain specific chemical products. It thus clearly separates these chemical warfare agents from the other chemical products used in the course of hostilities, such as fuel for rockets or torpedoes, smoke-generating products, etc. The toxic properties, related to the intention to use them as such for a hostile purpose, are therefore necessary for a chemical warfare agent to exist.

2. The concept of toxicity.

This concept must be described in detail. Different approaches have already been attempted in the past in order to define it more precisely.

(a) The quantitative approach

This approach is based on the concept of lethality alone ( $LD_{50}$ ,  $LCt_{50}$ ), which, strictly speaking, is insufficient because toxicity, below a certain threshold, does not necessarily imply a lethal effect. Complementary criteria relating to incapacitating effects, both physical and mental, are therefore desirable.

(b) The qualitative approach

WHO has developed this approach by distinguishing three levels of toxicity in chemical substances according to the type and intensity of the effect sought:

Substances termed lethal because they are intended to cause death;

Incapacitating agents, which create a temporary physical or mental indisposition and whose incapacitating effects continue well beyond the period of exposure;

Tear gas, whose harassing effect lasts for little longer than the period of exposure.

It should be noted that these three types of effect are related to the doses received. Thus, for example, slight intoxication by nerve gas will have only an incapacitating effect without causing death. As can be seen, the borderlines between these three categories are relatively fluid. Here again complementary criteria are desirable:

(c) The descriptive approach

On the basis of general structural formulae, it is possible to determine the character of certain types of chemical warfare agent. This would be possible, inter alia, for the category of nerve gases, most of which are of organophosphorus origin.

(d) The nominal approach

In this case a non-restrictive list of names of relevant products is drawn up.

(e) The approach based on suitability for military use

Specific characteristics such as shelf-life, volatility and explosion stability are not always essential requirements for a toxic substance to be classified as a warfare agent because volatility is related to tactical use, explosion stability is not necessary in the case of aerial dissemination and shelf-life is not essential if the substance is produced in situ, as in the case of binary weapons.

(b) Proposed definition

1. General-purpose criterion must therefore be complemented by toxicity criteria based on both lethality and other properties, combined with a supplementary description of structural formulae and accompanied by a non-restrictive list of names.
2. . . Accordingly we may say: "A chemical warfare agent is any chemical substance or any combination of chemical substances which is used by reason of its duly defined toxic properties, whether they are those of the substance itself or those of one of the final products of the combination".

(c) Application of the definition to binary weapons

The introduction into this definition of the concept of the "final product" of a combination, in other words, the result of the final synthesis between two or more components, is made essential by the existence of binary weapons, whose characteristic is precisely that they release a toxicity which is based not on the substances themselves (components or precursors), but, rather on the final product which they generate.

Thus, the detection of a non-highly-toxic substance capable of being used as a precursor of a binary product would not constitute proof of the violation of a treaty unless the existence in sufficient quantity of other precursors, and hence of the combination giving rise to the final product, i.e. the chemical warfare agent created by the marriage of the binary elements, had been demonstrated.

The reference to the concept of a precursor contained in the joint USSR-United States statement of August 1979 is related to this difficulty, namely, that a given substance can hardly be considered to be a precursor as long as the final product is not known.

In the two cases, it is essential to compile a list of known (identified) precursors of chemical warfare agents, which cannot be used for other purposes.

All these questions, whose origin lies in the existence of binary weapons, prompt the conclusion that such weapons admittedly constitute a special case but do not represent a separate category. In the light of the general-purpose criterion, chemical agents for non-military purposes would ipso facto be covered by the prohibition established in a treaty as soon as they were associated with a precursor such that the combination resulting therefrom would have the effect of generating a toxic final product.

(d) Distinction between single-purpose agents and dual-purpose agents

- (a) As regards single-purpose warfare agents, in other words, agents which can be used solely for military purposes, it is obvious that they should be prohibited, except in the quantities necessary for the study of protective measures and for research in general. These two activities require only minimal quantities which can in no circumstances be used for purposes other than those for which they are intended, i.e. essentially laboratory work. Thus, as far as Belgium is concerned for example, a few hundred milligrams per annum per substance are ample.
- (b) As regards dual-purpose agents, on the other hand, the question is obviously more delicate. Many such agents, particularly phosgene and cyanhydric acid, are widely used in the commercial sector. In the case of these agents, the treaty could be said to be violated only if an amount in excess of that authorized for the licit use of the product was stockpiled. If such a situation did occur, there would be a violation if a satisfactory economic explanation could not be given for the size of the stocks detected.

It should be noted that, because of special circumstances relating to production, situations might exist in which dual-purpose products were stored in quantities appreciably greater than could be accounted for on economic grounds. The discovery of situations of this type would inevitably give rise to interminable discussions and would unquestionably arouse distrust. It would seem that this could be averted only through the declaration of such stocks and their placement under the surveillance of a verification body.

- (c) Consideration should also be given to the situation in which the chemical substance, instead of being stockpiled, was converted into chemical weapons and stored in this form.

II. Definition of chemical munitions

(a) Justification of efforts to establish such a definition:

1. Because of the problem posed by weapons which can be obtained in complete form or whose operation is based on new technological principles, it is impossible to limit oneself, in defining a chemical weapon, to its essential component, the chemical warfare agent.

2. The definition of a chemical weapon must be conceived in its most general sense in order to cover all chemical weapons.
3. The conversion of a chemical substance into a chemical weapon could constitute a loophole in verification, in particular of the stockpiling of chemical substances.

(b) Proposed definition

1. Chemical munitions are any munitions in which the conventional charge is replaced either by a chemical substance or by a combination of chemical substances and which are used by reason of their duly defined toxic properties, whether they are the properties of the chemical substance or those of the final product of the combination.
2. It is self-evident that this definition of chemical munitions covers any container whose purpose is to propagate or disseminate the chemical substances in question. Chemical munitions are not necessarily conventional in type. Dual-purpose chemical substances delivered in bulk, in other words, not in the form of conventional munitions, may be disseminated by other methods. In this connexion, one has in mind mainly aerial dissemination, possibly by the technique which enables thickened substances to be scattered from very high altitudes.
3. The poisoning of hectolitres of drinking water by a few grams of toxins also constitutes a form of dissemination.
4. It logically follows that any method of dissemination comprising a chemical charge whose characteristics conform to the definition of a chemical warfare agent should also be prohibited.

(c) Tear gas and grenades containing such gas

Although what is in fact involved is a chemical warfare agent stockpiled in the form of a complete chemical weapon, the situation of such agents is a special one. They constitute an exception when they are used in operations for the maintenance of order.

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