CONFERENCE ON DISARMAMENT

CD/445
7 March 1984
Original: ENGLISH

THE NETHERLANDS

SIZE AND STRUCTURE OF A CHEMICAL DISARMAMENT INSPECTORATE

CONTENTS

GE.84-60607

1. INTRODUCTION

1.1. Verification of the compliance with a Convention banning chemical weapons has been at the heart of the debate on that subject in the Committee on Disarmament and its subsidiary bodies. Little attention however has been paid thus far to the structure and size of the inspectorate which will have to perform the different vertification functions. The purpose of this document is to address that particular issue in some more detail. Of course we realize that the ultimate structure and size of a chemical disarmament inspectorate cannot be defined as long as there is uncertainty about the precise nature of the verification provisions of a CW Convention. This uncertainty has implications for questions such as inspection schemes for individual plants, the number of plants to be inspected, the number of international inspectors needed for an inspection and the amount of time an inspection will take.

1.2. Nevertheless, we deem it timely and useful to devote somewhat more attention to the kind of chemical disarmament inspectorate that would be required to verify effectively the compliance with a CW Convention. The Netherlands believes that by discussing the structure and size of such an organization a clearer picture may emerge of the organizational and financial implications of certain verification provisions.

Because of the present uncertainty on the contents of the verification provisions a number of assumptions had to be made. Discussion of these assumptions in itself can perhaps enable us to conclude whether they are reasonable and can permit us in its turn to judge to what extent they substantially influence the size of the inspectorate. On the basis of these assumptions finally, in section 4 some rough calculations will be made in relation to the size of the future inspectorate.

1.3. In order to ensure the faithful compliance with a CW-Convention some inspection of the chemical industry will be necessary. The purpose of these inspections is not a profound and detailed investigation nor a scrutiny of the entire production process of chemical plants. The sole purpose is to make sure that no undeclared production of super-toxic chemicals or their key precursors is taking place in quantities that are relevant in the context of a CW Convention. These inspections should not hamper industrial production in any way, nor should they endanger industrial secrets. The Netherlands is convinced that if the purpose of the inspections is made sufficiently clear to all parties concerned, including the managements of the plants that will have to be visited, it should not be too difficult to organize inspections in such a way as to avoid hampering industrial production and compromising industrial secrets while at the same time fully attaining the purposes of the inspection.

1.4. Which industrial plants should be inspected? It seems natural to inspect all chemical plants that are able to produce super-toxic lethal chemicals or their key precursors in relevant quantities. Parties to a CW Convention should therefore undertake to declare not only all plants that <u>are</u> producing super-toxic lethal chemicals and their key precursors, but also all plants that <u>could</u> produce these in relevant quantities.

The criteria for the declaration of such plants of course need to be developed and defined.

2. GENERAL REMARKS ON THE INSPECTORATE

2.1. It is assumed that a CW Convention would contain provisions for the creation of a "Consultative Committee" (CC) composed of representatives of all the States parties. This Committee would inter alia give general guidance to a Technical Secretariat, established for the implementation of the Convention.

2.2. It seems natural to assume furthermore that the Consultative Committee would elect an "Executive Council", consisting of a smaller number of States parties. This Council would, among other things, give short-term guidance to the Technical Secretariat, in particular its inspectorate, approve inspection schemes, designate inspectors, handle financing, etc.

2.3. The Technical Secretariat, consisting mainly of inspectors and supporting staff, could be set up by drawing as much as possible upon the experience of existing international organizations employing independent inspectors under strict rules of operation and with a certain degree of diplomatic immunity. This includes questions as to how inspectors are to be designated for inspections in particular countries, their inspection rights, as well as the right of countries to refuse certain inspectors.

2.4. There are three main categories of on-site inspections:

A. Systematic continuous

B. Systematic non-continuous

(i) Regular

(ii) Random

C. Ad hoc ("challenge")

This classification into categories of on-site inspections has a direct bearing on the kind of inspector needed, as well as on his modus operandi, as will be illustrated hereafter.

A. Systematic continuous inspections would take place at CW destruction facilities.

B. (i) Systematic, but non-continuous regular inspections would take place:

(a) At closed-down declared CW-plants and during their destruction;

(b) At CW-stockpiles storage depots until the destruction of the stockpiles;

(c) At facilities producing small quantities of CW-agents for protective purposes.

(ii) Systematic, non-continuous random inspections would take place at certain chemical plants, namely:

(a) At plants that have been declared for producing certain super-toxic lethal chemicals and their key precursors for permitted non-CW purposes. 1/ Verification will have to ascertain two aspects:

- that the quantity of the declared production is in accordance with declared permitted purposes (i.e. a quantitative check);

- that no non-declared production of other super-toxic lethal chemicals and their key precursors is taking place (i.e. a qualitative check);

(b) At plants that have been declared for their capability of synthesizing organic chemicals in relevant quantities. At those plants the non-production of super-toxic lethal chemicals and their key precursors will have to be verified.

C. Ad hoc inspections under a challenge system could be held anywhere from civilian plants to the battlefield.

2.5. For continuous inspections, a permanent group of inspectors will be required on the spot, i.e. resident inspectors. Recruitment procedures should take into account that working and living conditions will not be easy because of occupational hazards and likelihood that destruction plants will be located in remote areas. Thus, a high degree of motivation will be needed. There should be a rotation of these inspectors so that hardships are evenly shared.

2.6. The continuous inspection of the destruction process will be largely a matter of routine, once the destruction process is under way. The systematic non-continuous inspections, particularly in the chemical industry, will be less routine-like and may therefore require a broader expertise than will be needed for the inspection of the destruction of stockpiles. Inventiveness and a broad experience in the civilian chemical industry will be needed to be able to find during short periods of inspection at different types of plants clues of possible non-compliance. Intensive travelling will be involved for these inspectors.

2.7. Ad hoc or "challenge" inspections are of a somewhat different nature. They might be requested on the basis of various kinds of information, such as indications of the use of CW, the finding of traces of a banned agent in a river downstream of a chemical plant, indications of a hidden CW stockpile, evidence of the existence of a large versatile chemical complex that has not been declared etc. Such questions would first have to be discussed in the appropriate organ of the Consultative Committee which could then decide to initiate an ad hoc investigation. Depending on the subject, use could be made of inspectors already employed in the secretariat or of other experts, to be designated by States Parties. A standing list of experts established on a wide geographical basis could be compiled and kept up to date permitting the quick choice of appropriate experts as need may be. It may be pointed out in this connection that the number of challenge inspections is likely to be relatively low. Hence, no permanent inspectors need to be designated for

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1/ The British paper CD/353 concentrates on this category of plants.

this taks alone. The appropriate organ of the Consultative Committee must be organized in such a manner that it can handle requests for challenge inspections swiftly and smoothly, using expertise from outside (such as the WHO and UNEP) when necessary.

2.8. The inspection to ensure that no militarily relevant quantities of super-toxic lethal chemicals or their key precursors can be or are produced above the level necessary for the declared permitted non-CW purposes (B (ii) (a)) will be of a quantitative nature. The reactions to the British list in CD/353 that have been made public up to now, demonstrate that the number of these plants will be limited.

2.9. The task of inspecting non-production of other super-toxic lethal chemicals of their key precursors in the chemical plants mentioned above (2.8.) can probably be accomplished easily by the same inspection team that inspects the quantity of declared production. This inspection will be of a qualitative nature: every trace of a non-declared and forbidden agent is a sign of violation of the Convention.

2.10. The verification of non-production in plants that are declared for their capability but not for their permitted production (B (ii) (b)) is identical to the verification of non-production in plants that are declared for their permitted production (B (ii) (a)). Of course not all chemical industries have to be declared: most of them can be left on one side, either because they are clearly not capable of producing the relevant agents (e.g. paint factories) or because they are too small to produce these in militarily relevant quantities (laboratories, small pharmaceutical plants). The alternative to a systematic inspection of the relevant plants on a random basis would be challenge inspections. But a request for a challenge inspection requires the submission of reasonably convincing information that something is amiss; such information will often be difficult to obtain and/or to present.

2.11. Systematic inspections can be held regularly or at random. Inspections of the chemical industry could probably most effectively be realized on a random basis. A certain number of random inspections is much more effective than the same number of regular inspections as random inspections inject the notion of chance. If, for instance, a declared plant would be inspected on a random basis on an average of once every three years, the chance of being visited within a month is about 3 per cent (1/36), even if it had been inspected just that day before. If inspections were to be held on a regular basis a party can be sure, in this example, that a plant that has been inspected the day before will not be inspected again for another three years.

2.12. The Technical Secretariat will need the assistance of States parties to obtain sufficient knowledge of the complex subjects to be handled. One possibility is a "technical support programme" similar to that in other fields, in the context of which new verification methodology and equipment would be developed by parties and transferred to the Technical Secretariat when applicable.

3. GENERAL ASSUMPTIONS UNDERLYING THE ROUGH CALCULATION OF THE SIZE OF A CW INSPECTORATE

3.1. In analogous existing situations one notes that the number of support personnel at headquarters is about twice as large as the number of inspectors in the field. The former include, besides general services staff (personnel division, translation, secretarial work etc.) those employed in sections dealing with the (computer) handling of data, assessing inspections, possibly analysing chemical

samples and/or organizing such analyses elsewhere, 2/ the training of inspectors etc. Computer handling of data with cross referencing can eventually become very useful for verification. However, less data handling will be involved than for instance in the IAEA, as the latter assesses all nuclear material flows from one safeguarded "material balance area" to another, whereas a chemical inspectorate will be mainly involved with qualitative assessments. Probably, the ratio support-personnel/ inspectors working from headquarters will have to be between 1 to 1.5 and 1 to 2. In the calculations to follow, the factor of 1.8. has been used. With respect to the resident inspectors permanently present at destruction facilities less support staff seems necessary. The factor of 1.0 has been used in the latter case.

3.2. In existing international organizations one inspector can achieve 40 man days/year inspection. This seems to be a reasonable assumption for a chemical inspector also, although a higher number of man days may be feasible.

3.3. To limit travel, the possibility of establishing a few regional inspection offices could be considered in particular near large concentrations of chemical activities subject to inspection. However, in view of the small inspectorate envisaged, this in all likelihood would not be sufficiently cost-effective.

3.4. Presumably, each State party to the CW Convention will need some sort of a "focal point" enabling contacts between the inspectorate and the facilities to be inspected. It could be left to the parties themselves to decide whether to assign the functions of focal point to an existing organization or to create a special body for this purpose. Such a national organization would also systematically collect and collate data. These data would constitute the basis for international inspections. Representatives of the national body could accompany the inspectors during their visits and assist them where necessary.

4. ROUGH CALCULATION OF THE SIZE OF A CW INSPECTORATE

The various categories of inspections would give rise to the following rough calculation of the size of a CW inspectorate:

A. Systematic continuous inspections. Verification of the destruction of declared CW stockpiles

Assumptions:

- During the first 10 years after the entry into force of the CW Convention six large and nine smaller destruction plants will be working simultaneously.

- For a continuous inspection of large destruction plants to be effective two inspectors will have to be on duty at all times. For the continuous inspection of smaller plants one inspector on duty at all times will be sufficient.

2/ It is to be expected that most chemical analyses will be done on the spot.

- Taking into account work shifts, holidays, illness etc. three to five inspectors will be needed in order to be able to have one person on duty continuously.

- The present state of the art with respect to technical means to monitor destruction does not allow to dispense with the continuous presence of one or more (according to the size of the destruction plant) international inspectors.

Conclusion:

- Approximately 60 to 100 inspectors are needed for the verification of the destruction of CW stockpiles during 10 years.

B. (i) Systematic non-continuous regular inspections

(a) Verification of the closure and destruction of declared CW production and munition filling facilities

Assumptions:

- Verification of non-operation of CW facilities can to a large extent be verified by technical means (tamper-indicating seals and/or cameras, possibly capable of interrogation e.g. by telephone etc.). Occasional visits by inspectors are necessary for the placement and maintenance of equipment, inspection of seals etc.

- Verification of the destruction of CW facilities can be done by a combination of remote sensing and regular on-site inspections.

Conclusion:

- In so far as destruction of stockpiles takes place at the site of former CW production facilities, non-operation and destruction of these facilities can be verified by the resident inspectors at this CW destruction plant.

- For the (estimated) remaining 15 CW production and munition filling facilities, 15 additional inspectors working from headquarters during 10 years seem to be more than sufficient.

(b) Monitoring of CW stockpiles until their destruction

Assumptions:

- CW stockpiles can to a large extent be monitored and safeguarded by technical means. Most of the CW stockpiles are initially situated near CW production facilities, which will be submitted to systematic non-continuous regular inspection (compare B (i) (a) above), and all stockpiles will at a given, preferably early, moment, in accordance with a declared plan, be transported to the destruction facilities, which are under systematic continuous international inspection (see 3. A), so that storage monitoring can be largely carried out by inspectors charged with scrutiny of the elimination of production facilities and stockpiles.

Conclusion:

- The number of separate inspections required for monitoring stockpiles will be relatively small and these will at any rate only be needed until all the stockpiles are located at the sites of their destruction

(c) Verification of production of super-toxic chemical agents for protective purposes

Assumptions:

- There will be a number - for instance 20 - of small scale facilities worldwide.

- These plants are inspected on an average of once every one and a half years. Smaller facilities producing a few grams per annum will require less frequent inspection than facilities producing one ton a year. For each inspection two inspectors will be visiting the plant during one working day. This form of inspection would consume about 25 man days/year.

Conclusion:

- About two inspectors will have to spend about a third of their time for the verification of the production of super-toxic agents for protective purposes.

B. (ii) Systematic non-continuous random inspections

(a) Inspection of plants producing for permitted non-CW purposes

Assumptions:

- Worldwide, about 50 plants produce super-toxic lethal chemicals or their key precursors for permitted non-CW purposes. 3/

- These plants are inspected through selection by drawing lots. Inspection of each of these plants takes place on an average of once every one and a half years. For each inspection three inspectors will be visiting the plant during an average of five working days. Inspection of these plants would thus entail 500 man days/year.

Conclusion:

- Approximately 10-15 inspectors will be needed permanently for the inspection of declared plants producing for permitted non-CW purposes.

3/ See the suggested list of key precursors in CD/353.

(b) Verification of non-production in other plants

Assumptions:

- Worldwide, about 500 other plants are capable of synthesizing organic chemicals in relevant quantities.

- These plants, to be declared in accordance with criteria to be defined, will equally be inspected on the basis of drawing lots, using a weighing factor in order to ensure that large and versatile chemical complexes have a greater chance to be inspected than smaller and more specialized plants.

  These plants will be inspected on an average of once every three years. For each inspection three inspectors will be visiting the plant during an average of three working days. Inspection of these plants would thus cost 1,500 man days/year.

Conclusion:

- About 30-40 inspectors are needed permanently for the verification of non-production in plants that have been declared not to produce super-toxic lethal chemicals or their key precursors but to be capable of synthesizing organic chemicals in relevant quantities.

C. Ad hoc "challenge" inspections under the fact-finding procedures

Assumptions:

- There are likely to be relatively few challenge inspections (which would include investigation of allegations of chemical warfare), particularly after the Convention has been in force for some time.

- These can be performed by the existing staff at the inspectorate and/or by specialists from member States or international organizations.

Conclusion:

- The possibility of "challenge" inspections has little bearing on the size of the inspectorate.

5. CONCLUSIONS

- About 50 inspectors and 90 supporting staff are needed permanently in the context of a CW-Convention.

- In addition about 75 to 115 inspectors and about 100 or less supporting staff are needed during roughly the first 10 years.

- The size of the organization depends greatly on the answer to the question on what scale inspection is planned for plants that are declared not to produce super-toxic lethal chemicals and their key precursors but to be capable of synthesizing organic chemicals in relevant quantities.

- After the 10-year period, during which destruction of stockpiles and destruction of CW plants has taken place, the envisaged CW secretariat will in any case be considerably smaller than the part of the IAEA-secretariat, including the inspectors, involved in the application of nuclear safeguards.