

**FRG Working Paper Submitted to the Committee on Disarmament: Some Aspects of International Verification of Non-Production of Chemical Weapons, July 12, 1979<sup>1</sup>**

1. In the negotiations on a convention on the prohibition of the development, production and stockpiling of chemical weapons and on their destruction the most difficult problem is that of verification. Adequate verification of a CW-ban must cover the following areas in particular:

- (a) destruction of existing stocks of chemical weapons,
- (b) destruction or shut-down of existing production facilities for such weapons,
- (c) control of current production of sensitive chemical agents to the extent necessary for the observance of a production ban.

2. This working paper is a contribution to the discussion of the item referred to under (c). Part I describes practices and principles of effective and economically unarmful control in the light of the Federal Republic of Germany's experience with the surveillance of its undertaking not to manufacture chemical weapons. Part II is a summary of the results of the international workshop on the verification of the non-production of chemical weapons held in the Federal Republic of Germany from 12 to 14 March 1979. Part III puts forward for discussion ensuing principles for verifying a chemical weapons production ban.

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The Federal Republic of Germany, already a party to the Geneva Protocol of 1925,<sup>2</sup> which prohibits the use of biological and chemical weapons in war, undertook as early as 23 October 1954 not to manufacture nuclear, biological and chemical weapons and thereby agreed to controls by the Armaments Control Agency of the Western European Union to ensure that this undertaking was being observed.<sup>3</sup>

The Armaments Control Agency established by the revised Brussels Treaty of 23 October 1954, has been monitoring the non-production of chemical weapons in the Federal Republic of Germany since 1957/58. Controls consist of the evaluation of written information, supplied upon request, of visits and on-site inspections. The experience which the Federal Republic of Germany has gained from WEU controls demonstrates that the practices outlined below could be useful in establishing effective and economically unarmful verification of a world-wide ban on the manufacture of chemical weapons.

<sup>1</sup> CD/37.

<sup>2</sup> *Documents on Disarmament, 1969*, pp. 764-765.

<sup>3</sup> The protocol whereby this obligation was undertaken may be found in *American Foreign Policy, 1950-1955, Basic Documents*, vol. I, pp. 979-984 (Dept. of State publication 6446).

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1. Controls are extended to all substances specified in a list to- gether with their chemical formulae. The list is continuously re- viewed by experts and modified or supplemented as necessary.

2. Excluded from controls are all apparatus, parts, equipment, installations, substances and organisms which are used for civilian purposes or for scientific, medical and industrial research in the field of pure and applied science. This affects not only those chemical prod- ucts used primarily for civilian purposes (e.g. hydrocyanic acid and cyanogen chloride) and intermediate and end-items not suited to mili- tary purposes, but also, for example, small and therefore militarily irrelevant quantities of substances which are recognized as warfare agents. Such minimal quantities are required for medical purposes and for the research, development and testing of chemical defence equipment and techniques.

3. Production controls are applied to end-items and not to manufac- turing processes. Accordingly chemical factories as a whole are not subject to control but rather individual substances of military relevance.

4. Non-production controls are applied to substances with charac- teristics which have been defined as necessary for the production of chemical weapons. These "characteristic substances" are not chem- ical warfare agents but are deemed to be initial or key products with- out which prohibited warfare agents could not be manufactured. Depending on which other chemical substances are added to them, they are suitable for the production of end-items for civilian purposes or for the chemical warfare agents on a prohibited list. The aim of controls at production plants is therefore to ensure that such sub- stances are not used for the production of the prohibited chemical warfare agents.

5. Controls are carried out in the decisive phase of reaction, the so- called controllable stage. The starting point for non-production con- trol of chemical warfare agents is defined as follows:

Controls in factories regarding a chemical product (chemical weapons) on the list approved by the council, can take, as their starting point, the chemical reaction or reactions immediately preceding the possible creation of the product on the list, in whatever form it may be.

Thus the controllable stage starts with the phase of production which, during the full production process, immediately precedes the completion of the end-item. This is the only stage at which controls at production plants can be carried out.

6. Chemical substances which can be used for both military and civilian purposes are not deemed to be chemical warfare agents if the quantities produced do not exceed peaceful civilian requirements. The controls determine whether the quantities produced do in fact exceed those requirements.

7. The initiative for on-site inspections lies with the Armaments Control Agency of the WEU. The director of the agency appoints two

to four officials of different nationality, one of them a national of the country in which the inspection is to be carried out. A representative of the competent national authority assists the agency in the execution of its controls.

During such controls the representatives of the agency enquire about the organization, operation and production programme of the plant.

The subsequent visit to the production plant covers only those departments dealing with the decisive phase of reaction. The inspectors are shown built-in measuring instruments so that they can verify the quantities of the pre-products employed in the production of a substance and the final output. If further clarification is required, the findings are compared with the factory's records or books.

8. The inspectors pay special attention to the factory's safety precautions. These are always clearly visible and cannot be concealed and together with the lack of special equipment and installations, provide the clearest possible indication that no chemical warfare agents are being produced in the plant.

9. In special cases sampling as a means of control is useful and effective for identifying specific substances and determining whether they are prohibited warfare agents. The high degree of toxicity of most of these substances poses the problem of liability in the case of accidents or damage caused or suffered by inspectors.

10. The inspection is carried out in stages in order to avoid, as far as possible, any interference with the civilian sector. As soon as the inspectors are satisfied that the non-production pledge is being kept, the control must cease. If the visit to the production plant, including the inspection of special safety precautions (first control measure), is not deemed to be sufficient, the control may be extended to the employment of initial and intermediate products in the controllable stage (second control measure). If there is still no certainty that chemical weapons are not being produced, the factory's records may be checked against the instrument readings (third control measure). Samples may be taken as the fourth and last measure.

11. After each on-site inspection the inspectors report orally to the director of the agency. They also prepare a written classified report which remains in the agency's files. It may not be brought to the notice of any person outside the agency. Neither the factory concerned nor the competent national authority is consulted in the preparation of the report.

The representative of the national authority who has taken part in the inspection also prepares a report so that the authority concerned may have its own documents available in the event of recurrent inspections. This report is transmitted to the management of the factory concerned.

12. The staff of the Armaments Control Agency are international officials. They must in no circumstances whatever reveal to third parties information obtained as the result of their official tasks. Special

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protection is accorded to industrial, economic, commercial and scien-  
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13. The Armaments Control Agency submits annual reports to the  
 Council of the Western European Union. These reports contain the  
 number of controls, the names of the companies concerned, and the  
 results, stating such difficulties or problems that may have occurred  
 without, however, going into detail.

## II

1. The workshop held in the Federal Republic of Germany from 12  
 to 14 March 1979 served the purpose of illustrating to an inter-  
 national audience of experts, by means of practical examples, the  
 experience gained from WEU controls.

The objection occasionally raised to on-site inspections as a means  
 of controlling current production in civilian chemical plants is that  
 they would be intrusive and liable to harm the legitimate interests of  
 the producers since they would involve the disclosure of classified  
 information of a technological and economic nature.

The Federal Republic of Germany fully acknowledges the need to  
 protect production secrets; being a country with a highly developed  
 chemical industry it has itself an interest in such protection. It is,  
 however, convinced that it is possible for on-site inspections to prove,  
 without disclosing any classified information on the production pro-  
 cess, that chemical warfare agents are not being produced. Warfare  
 agents are distinguished from compounds for peaceful uses by their  
 considerably higher degree of toxicity. Consequently, the production  
 of highly toxic substances on a scale required for military use necessi-  
 tates safety precautions which are visible in certain constructional  
 features of the production facilities. The absence of such safety pre-  
 cautions is easily seen during the course of a plant inspection and pro-  
 vides evidence that no highly toxic compounds are being produced.  
 Even where safety precautions are continually improved, as existing  
 facilities are developed or new facilities established, they will fall far  
 short of the protection technology required in factories producing  
 warfare agents. Hence, this method of verification does not require  
 the disclosure of any production secrets.

2. In the light of experience gained from this international verifica-  
 tion, the purpose of the workshop held in the Federal Republic of  
 Germany was therefore to show:

- that international on-site inspections of the current production  
 of substances which, by their chemical structure are related to  
 warfare agents, are an effective means of verification of a pro-  
 duction ban and
- that such inspections can be carried out without any impair-  
 ment of the factory's industrial processes and legitimate com-  
 mercial interests.

This was the aim of the invitation Federal Chancellor Schmidt  
 made to member States of the United Nations at the Special Session

of the United Nations General Assembly devoted to disarmament in May 1978 to participate in a workshop in the Federal Republic of Germany.<sup>4</sup> The State Secretary of the Federal Foreign Office, Herr van Well, renewed this invitation on 26 January 1979 at the opening session of the Committee on Disarmament.<sup>5</sup> 55 experts took part in the workshop coming from Australia, Belgium, Canada, Denmark, Egypt, Finland, France, the Federal Republic of Germany, Greece, Indonesia, Iran, Italy, Japan, Kuwait, Mexico, the Netherlands, Pakistan, Romania, Spain, Sweden, Switzerland, the United Kingdom, United States of America and Yugoslavia. A representative of the United Nations Secretary-General also attended the workshop.

The programme, co-ordinated with the Federation of Chemical Industries offered the participants, after an introductory meeting in Bonn, the opportunity to visit the production plant of one of the three biggest chemical companies of their choice; either the hostathion and afugan production in the Knapsack plant of Hoechst A.G., or the parathion and azinphos production of Bayer, A.G. at their plant-protection factory in Dormagen, or the thion acide ester plant of BASF Aktiengesellschaft in Ludwigshafen, i.e., in each case, the production of insecticides on a phosphorous basis. Phosphorous insecticides are, in their chemical structure and reactions—and in this aspect only—related to warfare agents.

The participants had the opportunity to get acquainted with the practice of international on-site inspection. The main purpose of this exercise was to demonstrate that

- in the absence of safety precautions no supertoxic compounds can be manufactured in the production plants at present available to the chemical industry,
- the absence of such safety precautions is perceivable in the course of a plant inspection and thus to prove the non-production of warfare agents,
- a rapid conversion of available production plants into plants producing warfare agents is technically not possible, and that
- the chemical industry in the Federal Republic of Germany does not object to controls of its production plants with regard to the possible production of warfare agents or of characteristic pre-products of warfare agents.

The final discussion on the workshop showed that it served its purpose.

3. It became apparent that any effective verification of a chemical weapons ban must include the application of international control measures. Naturally they can and should be combined with national ones. Regular on-site inspections carried out by an international control authority should, however, be an indispensable component of any

<sup>4</sup> The invitation is set forth in *Documents on Disarmament, 1978*, pp. 358–359.

<sup>5</sup> CD/PV.5, p. 34.

General Assembly devoted to disarmament in a workshop in the Federal Republic of Germany in the Federal Foreign Office, Herr Secretary of State, on 26 January 1979 at the opening of the Conference on Disarmament.<sup>5</sup> 55 experts took part in the workshop from Australia, Belgium, Canada, Denmark, the Federal Republic of Germany, Greece, Japan, Kuwait, Mexico, the Netherlands, Norway, Sweden, Switzerland, the United States of America and Yugoslavia. A representative of the Secretary-General also attended the

workshop. It was convened with the Federation of Chemical Industry as participants, after an introductory meeting in Bonn to visit the production plant of one of the three plants of their choice; either the hostathion and Knapsack plant of Hoechst A.G., or the production plant of Bayer, A.G. at their plant in Ludwigshafen, or the thion acid ester plant of Hoechst A.G. in Ludwigshafen, i.e., in each case, the production of phosphorous insecticides on a phosphorous basis. Phosphorous insecticides have a specific structure and reactions—and in this respect they are warfare agents.

The workshop provided an opportunity to get acquainted with the production of phosphorous insecticides on-site inspection. The main purpose of this workshop was that

to ensure safety precautions no supertoxic compounds are produced in the production plants at present available in the chemical industry,

that safety precautions is perceivable in the production plants and thus to prove the non-production of warfare agents,

that the production of available production plants into plants for the production of warfare agents is technically not possible, and that the production of warfare agents in the Federal Republic of Germany is controlled by the Federal Republic of Germany in the production plants with regard to the production of warfare agents or of characteristic warfare agents.

The workshop showed that it served its purpose.

That any effective verification of a chemical weapons ban requires the application of international control measures and should be combined with national control measures carried out by an international convention, be an indispensable component of any

*Documents on Disarmament, 1978, pp. 358-359.*

international control measures designed to ensure the non-production of chemical weapons as laid down in a convention. Other international control measures such as near-site inspections (emission analyses), satellite monitoring, statistical control of production figures, and the consumption of raw materials and basic chemicals do not suffice to replace on-site inspection, nor can off-site inspections and the opto-electronic sealing of shut-down factories be a satisfactory substitute.

### III

For the practical verification of a world-wide ban on the production of chemical weapons, the following principles can be drawn from this experience:

- effective verification of a production ban necessitates adequate on-site inspections of current production,
- such inspections can be carried out without any impairment of the industrial processes and legitimate commercial interests of the plant concerned.

The necessary prerequisites are that

- chemical weapons be precisely defined, and existing lists be modified and/or supplemented,
- the fields of pure and applied research and of civilian use should be excluded from controls,
- information be furnished in reply to an annual request by a verification authority in respect of chemical weapons; this would ease the task of selecting those factories which were eligible for non-production controls,
- the controllable stages be defined; specific characteristic substances would have to be defined as initial products,
- principles should be worked out for the gradual implementation of non-production controls and that
- the civil peaceful requirements of specific (ambivalent) chemical substances on the prohibited list should be roughly estimated; they would have to be reported regularly each year.

### Statement by Former ACDA Director Smith Before the Senate Committee on Foreign Relations: SALT II Treaty, July 16, 1979<sup>1</sup>

I should say at the start that I have not been involved in SALT negotiations for almost 7 years, and make no claim to special expertise in the detailed provisions of the proposed treaty.

May I also express the hope that in deliberations on this treaty, some of the mood of earlier years of the nuclear era may be recap-

<sup>1</sup>Hearings . . . on Ex. Y, 96-1 . . . Pt. 2, pp. 2-6.