

# **Strengthening the Chemical Weapons Convention**

## **First CWC Review Conference Paper No 2**

### **Maximizing the Security Benefits from the First Review Conference of the Chemical Weapons Convention**

**December 2002**

**Series Editors**

**Graham S Pearson and Malcolm R Dando**

Department of Peace Studies, University of Bradford

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# MAXIMIZING THE SECURITY BENEFITS FROM THE FIRST REVIEW CONFERENCE OF THE CHEMICAL WEAPONS CONVENTION

by Graham S. Pearson

## REPORT\* OF THE NATO ADVANCED RESEARCH WORKSHOP BRATISLAVA, SLOVAK REPUBLIC: 19 - 21 SEPTEMBER 2002

### Introduction

1. The NATO Advanced Research Workshop entitled "Maximizing the Security Benefits from the First Review Conference of the Chemical Weapons Convention" was held in the Hotel Tatra, Bratislava, Slovak Republic on Thursday 19 September through Saturday 21 September 2002 under the co-directorship of Ingr. Jozef Babik, Director of the Department for the Control of the Prohibition of Chemical Weapons, Ministry of Economy, Bratislava, Slovakia Republic and Professor Graham S. Pearson, Visiting Professor of International Security, Department of Peace Studies, University of Bradford, Bradford, UK. The Workshop objective was to critically review the new scientific and technological developments of relevance to the Chemical Weapons Convention in order to identify particular elements that should be addressed in the Final Declaration of the First Review Conference of the Chemical Weapons Convention to be held in April 2003. The Workshop was attended by 41 individuals from 16 countries, of which 20 came from 6 of the original NATO countries (Canada, France, Germany, Netherlands, United Kingdom and United States) and 19 came from 9 of the new NATO countries and cooperation partners (Czech Republic, Hungary, Latvia, Poland, Russian Federation, Slovak Republic, Slovenia, Ukraine and Uzbekistan) and one from each of Australia and Brazil. The numbers from the new NATO countries included the observer from the NATO Panel on Security-Related Civil Science and Technology. Two participants came from the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW) and four participants were members, including the chairman, of the OPCW Scientific Advisory Board. 40% of the experts came from the National Authorities for the Chemical Weapons Convention in 11 of the 16 countries represented at the Workshop.

2. The requirement for the Review Conference is elaborated in Paragraph 22 of Article VIII of the Chemical Weapons Convention<sup>1</sup> which states that:

*22. The Conference shall not later than one year after the expiry of the fifth and the tenth year after the entry into force of this Convention, and at such other times within that time period as may be decided upon, convene in special sessions to undertake reviews of the operation of this Convention. **Such reviews shall take into account any relevant scientific and technological developments.** At intervals of five years thereafter, unless otherwise decided upon, further sessions of the Conference shall be convened with the same objective.[Emphasis added]*

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\* This report is based on and developed from material that I presented in the final session of the Workshop giving my appreciation of the outcome of the Workshop. It represents my personal assessment of a lively, effective and enjoyable Workshop.

<sup>1</sup>United Nations, *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction*, Corrected version in accordance with Depository Notification C.N.246.1994.Treaties-5 and the corresponding Proces-Verbal of Rectification of the Original of the Convention, issued on 8 April 1994. Available at <http://www.opcw.org/cwc/cwc-eng.htm>

In addition, the Verification Annex to the Chemical Weapons Convention in *Part IX Regime for Other Chemical Production Facilities* contains a requirement that at the first review conference, "the provisions of this part of the Verification Annex shall be re-examined in the light of a comprehensive review of the overall verification regime for the chemical industry (Article VI, Parts VII to IX of this Annex) on the basis of the experience gained. The Conference shall then make recommendations so as to improve the effectiveness of the verification regime."

3. The Workshop was designed to critically examine these two interrelated key areas relating to the forthcoming First Review Conference of the Chemical Weapons Convention (CWC) to be held in The Hague, The Netherlands starting on 28 April 2003. The Convention requires the first Review Conference to take into account any relevant developments in science and technology and also to re-examine the requirements for verification of other chemical production facilities (OCPFs) in the light of a comprehensive review of the overall verification regime for the chemical industry and to make recommendations to improve the effectiveness of the verification regime. The two key areas were thus the challenges to the Convention from the scientific and technological developments and how the OCPF verification regime might best be developed taking into account the experience gained in implementing the verification regime in the chemical industry and thereby ensure the future health of the CWC prohibition regime. As the negotiation of the CWC was completed in the early 1990s, it is necessary to consider the scientific and technological developments over the past decade as well as looking ahead for the next five to ten years when considering the issues for the First Review Conference.

4. The Workshop programme was divided into four sessions:

**I. Scientific and Technical Issues for the First CWC Review Conference: Opportunities and Challenges.** In this session, two representatives from the Technical Secretariat, from the Directors of two National Authorities and from the Chairman of the Scientific Advisory Board set the scene for the Workshop by addressing their perceptions of the key scientific and technological issues. This was complemented by a presentation on the IUPAC workshop entitled *Impact of Scientific Developments on the Chemical Weapons Convention* held in Bergen, Norway on 30 June to 3 July 2002.

**II. Scientific and Technical Issues relating to the Effectiveness of the Verification Regime.** In this session, presentations addressed the general purpose criterion and the importance of its implementation both in respect of the Convention and in regard to protection against chemical terrorism, the Directors of two National Authorities gave overviews of the verification regime for the chemical industry, and broader issues such as trends in inspection, the role of sampling and analysis, and the role of Other Chemical Production Facilities (OCPFs) in the regime were addressed.

**III. Scientific and Technological Challenges to the Convention.** In this session, presentations addressed the scientific and technological challenges to the Convention in areas such as unscheduled chemicals in the mid-spectrum region, advances in chemistry and new toxic agents and how this might be addressed at the First Review Conference.

#### **IV. Maximizing the Security Benefits from the First CWC Review Conference.**

In this session, consideration was given in a presentation and a subsequent panel discussion to how the effectiveness of the verification regime and the implementation of the general purpose criterion could be improved.

5. Overall, the Workshop was particularly effective and timely as it enabled the participants to review and gain an appreciation of a wide area of the scientific and technological developments relevant to the CWC and thereby gain a perception as to which developments present particular risks to the Convention against the background of the verification regime for the chemical industry which for completeness can be regarded as comprising the regimes for Schedule 1, Schedule 2 and Schedule 3 chemicals and for Other Chemical Production Facilities (OCPFs).

6. The spread of participants at the Workshop with about half being experts outside governments and the other half coming from National Authorities or other government departments or agencies which would be involved in or providing technical advisers to the national delegations participating in the First Review Conference was a key factor that made the Workshop especially valuable in aiding preparations for the Review Conference and contributing towards shared extended understandings which would contribute to the strengthening of the CWC.

7. The key points emerging from the presentations and discussion in each of the main sessions of the Workshop are considered in turn. These all contributed to the development by the participants during the Workshop of their appreciation as to what the focus of the First Review Conference should be.

#### **Scientific and Technical Issues for the First CWC Review Conference: Opportunities and Challenges**

8. The opening session set the scene for the Workshop with presentations by representatives from the Technical Secretariat, by the Directors of two National Authorities and by the Chairman of the Scientific Advisory Board addressing their perceptions of the key scientific and technological issues. This was complemented by a presentation on the IUPAC workshop entitled *Impact of Scientific Developments on the Chemical Weapons Convention* held in Bergen, Norway on 30 June to 3 July 2002.

9. It was evident that the Review Conference provides the States Parties with the opportunity to step back and review the operation of the Convention from a wider perspective. It was consequently, and rightly so, separated from the annual Conferences of the States Parties. The States Parties had decided that the review process would address topics rather than an Article by Article review as had been carried out by Review Conferences for other multilateral disarmament treaties. It was clear that the aim of the Review Conference should be to steer the regime for the future. An overambitious agenda should be avoided with the aim being focussed onto what is achievable. Insofar as preparations for the Review Conference are concerned the value of background papers by the Technical Secretariat was recognized as providing an essential starting point. A particular point that should be addressed by the Review Conference was the importance of **all** States Parties achieving effective national implementation as it was still evident that many States Parties had yet to report their national implementation measures to the Technical Secretariat.

10. The preparatory process for the Review Conference was involving both States Parties and the Technical Secretariat. However, as of September 2002, the Open Ended Working Group had largely addressed procedural rather than substantive matters. In discussion, a number of points which should be considered at the Review Conference were identified:

- The effectiveness of the prohibition regime internationally in all the States Parties depends on the presence in each State Party of the necessary overarching national legislation with significant penalties for non-compliance.
- The importance of transparency in demonstrating to the States Parties and both internationally and nationally to the scientific and technical community as well as to industry and the general public that the CWC is being effectively implemented both nationally and internationally. There is legitimate concern that the provisions in the Convention for protection of confidential information are being misused to protect information that is already in the public domain.
- The importance of the provisions in the Convention to amend the Schedules and the Annexes needs to be reaffirmed even though it may not yet be timely to amend the Schedules. It is, however, timely to start thinking about the methodology to be adopted in considering what chemicals might be added to or removed from the Schedules.
- In considering the verification regime for OCPF's, the involvement of States Parties in the inspection selection process needs to be developed.

11. The Scientific Advisory Board of the OPCW has already addressed a number of technical issues and recognised that it was important to keep its deliberations within the scientific and technological area even though its recommendations needed to be tailored to practically and politically viable. It was evident that there was a need for improved integration of the Scientific Advisory Board and both the OPCW/Technical Secretariat and the States Parties. There would be benefits from establishing improved links between the Scientific Advisory Board and the national scientific and technical experts who advise National Authorities. As a result of technical developments, the General Purpose Criterion was becoming more and more important, but the question was what should be done.

12. National Authorities recognized the importance of improved collaboration with other National Authorities on national implementation and on preparing declarations. This was particularly true in regard to:

- Preparing declarations of exports/imports and resolving inconsistencies
- Seeking a common nomenclature for use in declarations and national implementation
- Reviewing, streamlining and implementing the recommendation for a Global Harmonization System under the World Customs Union for the chemicals whose export and import needs to be declared.

It was timely to review the process and the methodology to be used for the addition, movement or deletion of chemicals from the Schedules even though there may be no suggestions for amendment of the Schedules at present. It would be wise to engage in

discussion about the methodology to be used in considering which chemicals might be added or deleted from the Schedules prior to using the amendment process to make changes. It would also be sensible for the Review Conference to reaffirm the importance of flexibility in regard to the amendment of the Schedules and of the Annexes. It was also important to recognise that all toxic chemicals are included within the Chemical Weapons Convention regardless of origin or method of production. Indeed the method of production was not relevant but the product was.

13. The International Union of Pure and Applied Chemistry (IUPAC) had held a Workshop entitled *Impact of Scientific Developments on the Chemical Weapons Convention* in Bergen, Norway on 30 June to 3 July 2002 to provide an input to the First Review Conference. Key points that had emerged included the following:

- IUPAC could play an important role in assisting education and outreach to the chemical community -- both in academia and in industry.
- There had been and were immense advances in biomolecular science and chemical synthesis which appeared to be changing the landscape through designed chemical targeting resulting in the identification of new biologically active compounds some of which will be highly toxic.
- New methods of synthesis and manufacture were also being used around the world.
- There was increasing existence worldwide of highly-flexible multipurpose production facilities as well as of more specialised plants supplying the world market.

#### **Scientific and Technical Issues relating to the Effectiveness of the Verification Regime.**

14. In this session, presentations addressed the general purpose criterion and the importance of its implementation both in respect of the Convention and in regard to protection against chemical terrorism, the Directors of two National Authorities gave overviews of the verification regime for the chemical industry, and broader issues such as trends in inspection, the role of sampling and analysis, and the role of Other Chemical Production Facilities (OCPFs) in the regime were addressed.

15. The General Purpose Criterion is clearly recognised as being central to the health of the Convention and that it is incorrect to have perceptions that there are gaps in regard to chemicals such as novichoks, etc. The point is that the prohibitions and definitions in Articles I and II are all embracing and that the chemicals listed in the Schedules were never intended to be, and never could be, comprehensive. The Convention totally prohibits the development, production, acquisition, stockpiling retention or use of chemical weapons and defines chemical weapons as meaning the following, together or separately:

- (a) Toxic chemicals and their precursors, **except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes**; [Emphasis added]*
- (b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices;*

- (c) *Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).*

The text in bold is referred to as the **general purpose criterion** which ensures that all toxic chemicals and their precursors are embraced by the Convention *except where intended for purposes not prohibited under the Convention, as long as the types and quantities are consistent with such purposes*. Toxic chemicals are defined in the Convention as meaning:

*Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere.*

All chemicals that can cause death, temporary incapacitation or permanent harm to humans or animals are thus prohibited unless they are in types and quantities consistent with their intended uses for purposes not prohibited under the Convention which are defined in the Convention as:

- (a) *Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes;*
- (b) *Protective purposes, namely those purposes directly related to protection against toxic chemicals and to protection against chemical weapons;*
- (c) *Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare;*
- (d) *Law enforcement including domestic riot control purposes.*

16. There is, however, concern that work on chemicals for "non-lethal weapons" potentially disregards the Convention and could, if not checked, seriously erode the effectiveness of the regime. The Convention clearly places the obligation on States Parties to implement the General Purpose Criterion -- and to do so makes it vital for States Parties to have overarching General Purpose Criterion legislation in place and thereby avoid potential safe havens for the supply of chemicals to terrorists or others. There would clearly be benefits from States Parties sharing ideas and information on the implementation of the General Purpose Criterion.

17. Two particular points made by National Authorities in regard to the effectiveness of the verification regime following the first five years after the entry into force of the CWC were that the procedures and means to protect confidentiality had been found to be effective and that in implementing the verification regime it was vital to work with the OPCW inspection teams. It was recognised that the inspection regime thus far has been successful. However, in looking to the future, **flexibility** was essential. In particular, reinspections of Schedule 1, 2 and 3 facilities should depend on the assessed risk and care should be taken to avoid overprescription of verification resources. Care needs to be taken that verification resources are made available for Article VI inspections and the regime needs to pay more attention to Schedule 3 and OCPF facilities. In addition, there is a need for States Parties to submit nil returns in regard to declarations should the State Party not have anything to declare. Finally, sampling and analysis needs to be addressed.



18. In respect of the inspection regime for OCPFs, it was recognised that this would be increasingly important in the future. It is important to ensure that all PSF and DOC facilities are indeed captured and those which are declarable, declared to the Technical Secretariat. However, the OCPF inspection methodology needs to be different from that for Scheduled chemical facilities and the OCPF selection methodology needs to be addressed. The question has to be asked whether 24 hours is long enough for an effective inspection. Although Part IX of the Verification Annex states that *"the general aim of inspections shall be to verify that activities are consistent with the information to be provided in declarations. The particular aim of inspections shall be the verification of the absence of any Schedule 1 chemical, especially its production,..."*, it appears that increasingly the aim of OCPF inspections should be to verify that activities are consistent with the information to be provided in declarations.

19. In considering broader trends and issues relating to the effectiveness of the verification regime, it was noted that:

- During the past five years there had been an unfortunate trend towards the narrowing of the scope of the Convention.
- A disproportionate effort is having to be devoted to the verification of the destruction of chemical weapons largely because of certain decisions made during the PrepCom phase turned out to be unduly cautious.
- It has become evident from practice challenge inspections, that there are significant logistical problems in mounting a challenge inspection.
- Restrictions have been imposed by States Parties on the use of inspection equipment.

Consequently, the prognosis for the future is bleak.

20. It will be important that the Review Conference address these issues:

- The purpose and object of the Convention need to be recalled
- Focus needs to be put on the verification goals

It was recognised that States Parties need to focus on what the Convention can do **for** them rather than on what it does **to** them.

21. Potential risks to the regime were recognized as coming from non-scheduled chemicals, OCPFs, pharmaceutical plants particularly in regard to toxins and peptides, and from miniaturization and production technology developments. It was therefore considered that the outcomes of the Review Conference should include:

- Inspections should move towards being more flexible and of a qualitative nature
- Inspection effectiveness needs to be enhanced
- Recognition that Schedule 1 chemicals are not the defining scope of the CWC and hence a refocus of the verification goals.

Overall, States Parties need to become less obsessed with the burdens and think more about the benefits and thus about verification.

22. In regard to sampling and analysis, it was recognised that this is an important element of the CWC regime. However, during the first five years, sampling and analysis has rarely been used thereby raising the risk that this capability may be lost through lack of use. It was, however, recognised that sampling and analysis will be a key capability for investigations of alleged use -- and should there be a chemical terrorism attack, then forensic analysis will be required. Although there were numerous issues being identified about sampling and analysis, there appeared to be little sense that a consensus emerging as to the key issues needing to be addressed. It would be important that the Review Conference should encourage the use of sampling and analysis and set in train a process to identify, and then address, the real issues regarding sampling and analysis.

23. A valuable overview was presented of the role of OCPFs in the CWC verification regime. The regime addressing OCPFs had been developed by the negotiators of the CWC to fill the gap of CW capable facilities and the requirement for the OCPF regime to be reviewed at the First Review Conference had been deliberately included. A number of issues relating to the OCPF regime in the light of the experience thus far were identified. In respect of OCPF declarations, there had been a narrowing of the interpretation of what should be declared contrary to the aim of the regime. In respect of the process of selecting OCPF sites for inspection, there was a need to decide how the selection criteria available in the Convention should be used, and in the regard to OCPF inspections, these had initially been more focussed on audit than on the consistency check stated in Part IX of the Verification Annex -- *the general aim of inspections shall be to verify that activities are consistent with the information provided in declarations.*

24. Consequently, at the Review Conference, the following considerations should be born in mind:

- Recall that Part IX of the Verification Annex was designed to be flexible
- Use this flexibility to address changing technologies and risk
- Recognise growing concern about unscheduled chemicals
- Adopt broader interpretation of main activities
- Adopt understanding that 'biosynthesis' included in 'production by synthesis',

§ Consider extending exemption to include plant sites that "exclusively produce food and drink"

- Adopt greater emphasis on consistency check

§ Avoid undue emphasis on Schedule 1 absence

The overall shift of the OCPF regime should be towards looking at products of the facility and their consistency with the declared purposes.

25. In reviewing and developing the Part IX regime, the advantages of capturing additional facilities need to be made clear by bringing out what the benefits are. It needs to be clear what such capture achieves for the overall regime. Likewise, it needs to be made clear what the risks are if additional facilities are not captured by the Part IX regime; such risks include the growing concerns about the risks to the CWC regime from unscheduled chemicals and the appreciation that biotechnology and pharmaceutical facilities cannot be safely left out of the OCPF regime. It was also noted that chemical terrorism concerns as well as public safety and environmental concerns are increasingly leading regulators to hold information about the nature of materials in all facilities and the hazards posed by such materials. There could well be benefits in the exploring the synergies between this trend and the Part IX regime.

### **Scientific and Technological Challenges to the Convention**

26. In this session, presentations addressed the importance of addressing unscheduled chemicals in the mid-spectrum region of the CWC and BTWC such as bioregulators and toxins, the advances in chemistry of relevance to the Convention, threats posed to the Convention by new toxic agents and the importance of the implementation of the general purpose criterion, technical and market trends of relevance to the Convention, and finally the importance of reaffirming that all relevant scientific and technological developments are included in the prohibitions of the Convention.

27. The mid-spectrum region between chemical and biological agents includes substances such as bioregulators and toxins:

Classical CW	Industrial Pharmaceutical Chemicals	Bioregulators Peptides	Toxins	Genetically Modified BW	Traditional BW
Cyanide Phosgene Mustard Nerve Agents	Aerosols	Substance P Neurokinin A	Saxitoxin Ricin Botulinum Toxin	Modified/ Tailored Bacteria Viruses	Bacteria Viruses Rickettsia  Anthrax Plague Tularemia
← Chemical Weapons Convention →		← Biological and Toxin Weapons Convention →			
← Poison →			← Infect →		

It needs to be recognised that these are all chemicals and that almost all are not included in the Schedules -- the two that are listed in Schedule 1 are ricin and saxitoxin. These midspectrum materials can now be readily produced in quantity -- and for prohibited purposes, impurities are not a problem. The challenge to the Convention posed by such materials is further increased by the recent advances in drug delivery techniques.

28. The importance of addressing such unscheduled chemicals was underlined by non lethal weapons programmes which appeared to be questionable depending on the objective of such a programme. It was recognised that under the CWC, *Article II Definitions* includes under the term "*Purposes Not Prohibited Under this Convention*" the following "*Law enforcement including domestic riot control purposes*" and the same Article defines "*Riot Control Agent*" as "*Any chemical not listed in a schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.*" In addition, *Article I General Obligations* includes the following:

5. *Each State Party undertakes not to use riot control agents as a method of warfare.*

States Parties are required under Article III Declarations to make the following declaration:

*(e) With respect to riot control agents. Specify the chemical name, structural formula and Chemical Abstracts Service (CAS) registry number, if assigned, for each chemical it holds for riot control purposes. This declaration shall be updated not later than 30 days after any change becomes effective.*

Information on the nature of the riot control agents declared by States Parties is provided in the Annual Report of the OPCW (e.g. Annex 7 of the 2001 report).

29. It was not evident that non lethal weapons programmes were solely aimed at producing riot control agents as there appears to be some work on development of delivery systems for military operations other than war. There was a danger that a non-lethal weapons programme

based on mid-spectrum agents and delivery devices could seriously erode the prohibitions of the CWC. In addition, capabilities and facilities for a non-lethal programme could appear to be readily switched to a prohibited lethal weapons programme. As the BTWC does not include any provision for use of biological agents for law enforcement purposes, and furthermore prohibits the use of such agents or toxins *for hostile purposes or in armed conflict*, any such programme based on mid-spectrum agents would be in breach of the BTWC.

30. It was therefore considered that the First CWC Review Conference should, in the light of the potential risk to the Convention posed by non-lethal weapons, reaffirm the breadth of the Article I prohibitions and of the Article II definitions of chemical weapons and of toxic substances. In addition, the Review Conference should recognise that the prohibitions in Article I "*never under any circumstances*" mean that the development, production, retention or use of a non-lethal chemical weapon for military purposes other than war is totally prohibited. Further, it should also recognise that the law enforcement exemption relates solely to a legitimate use of chemicals and not to the development, production, retention or use of chemical weapons.

31. There had been significant advances in chemistry over the five years since the Convention entered into force. Furthermore the first Review Conference was taking place over 10 years since the negotiation of the Convention had been completed. It was recalled that the Convention defines chemical weapons as being:

*Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes;*

and that toxic chemicals are defined as:

*Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere.*

The Annex on Chemicals was effectively finalised in 1992 and, although the Convention includes a procedure whereby changes can be made to the Annexes, this change procedure has not yet been used to adjust the lists of chemicals in the Schedules. It was suggested that the change procedure might have been used to add novichoks to the Schedules as it was likely that they would have been included had they been known about in 1992 when the Schedules were finalised.

32. Concerns were expressed about non-lethal weapons programmes, which do not appear to meet the criteria for riot control agents, as well as about the chemical products of the biotechnology industry. All of this reemphasised the importance of the general purpose criterion and underlined the increasing perception of the risks to the Convention from chemicals **other than** those on the Schedules.

33. Another appreciation of the advances in chemistry of relevance to the Convention recognised the importance of considering applications to aid the sampling and analysis regime. It was noted that improvements were needed to the designated laboratory regime. Further attention needs to be given to the analysis of authentic samples so that guidelines

could be adopted on detection levels and validated tests were needed for biomedical samples and for toxins. In addition, trials were needed of the logistics of sample transport so that when required samples could indeed be transported to the designated laboratories. There was also a need to consider means and incentives to encourage designated laboratories to improve their capabilities.

34. It was recalled that the Convention states that sampling and analysis "shall" be carried out at Schedule 2 inspected plants and "may" be carried out at Schedule 3 and OCPF facilities. It was considered that the present Technical Secretariat analytical equipment is good enough to carry out such analyses for chemicals other than toxins but the equipment is now old and cumbersome. If the bulk and cost of equipment transportation is a problem then it is important to find a way forward such as through making more use of off-site analysis or, where possible, of carrying out analyses using host facility laboratories. It was also important that the Technical Secretariat should have greater flexibility in replacing equipment when necessary. Recent decisions authorizing the Director-General to make proposals to the Executive Council for changes to the specification of approved equipment and for entirely new equipment are welcomed.

35. Changes to industrial production need to be taken into account in the review of the OCPF regime. It was evident that there are a number of trends:

- Increasing interest in biocatalysis for individual reaction steps in chemical manufacturing
  - use of biotransformation using microorganisms and isolated enzymes
- Transition from large plant sites with several dedicated continuous processes to many single facility sites with relatively low throughput enabling flexible, contract manufacture in batches.
- Developments in technology were leading to process intensification, and a lean manufacturing approach operating with higher efficiency and producing what was required just in time. Improvements were also being made in process control and automation as well as in the materials of construction.

These developments would result in the use of smaller, more capable plants performing a wide range of chemical processes with high capability which might not, however, be chosen for inspection by the current OCPF inspection selection process. It was recognized that such plants could fall below the declaration threshold yet represent a risk to the Convention.

36. A further consideration of the risks to the Convention posed by new toxic chemicals noted the novichoks and the nerve agent GP, carbamates, bicyclic organic compounds and bioregulators. The importance of the General Purpose Criterion was emphasised as this includes all such materials within the fundamental prohibition of the CWC. In respect of possible changes to the Schedules, it was recalled that the intent was that these should be flexible and it was therefore considered that the novichoks and the GP agents should be added to Schedule 1. However, it was possible that the first Review Conference might decide to focus on adjusting the OCPF regime and defer changes to the Schedules until the second Review Conference. Insofar as the concerns relating to riot control agents and possible non-lethal weapons programmes are concerned, consideration might be given to requiring more extensive declarations than just the name of any riot control agent held by a State Party.

37. An appreciation of technical and market trends of relevance to the Convention identified five technical trends:

- High environment and safety standards were increasingly being required with extensive safety precautions, such as double-walled piping, restricted access, medical services and remote control.
- Sophisticated process control was increasingly being adopted which also meant that there were fewer sampling points in a process plant. Whilst this made verification under the CWC easier, there were concerns that there was a higher risk of loss of proprietary information. A higher degree of expertise is required by inspectors.
- Industrial parks were increasingly being used rather than plant sites. This meant that the definition of plant sites in the CWC (Verification Annex, Part I, "*Plant Site (Works, Factory) means the local integration of one or more plants, with any intermediate administrative levels, which are under one operational control ...*") did not apply in the current situation where in an industrial park, the plant manager provides services to usually several Business Units, including non-affiliated companies, and has no overall operational control.
- Biotechnology developments was resulting in new companies and new strategic alliances with new production technologies in an extremely competitive environment.
- Certification (ISO 9001, 14001, GMP and GLP) was becoming much more widespread. This meant that plant personnel were increasingly familiar with external auditors and that good documentation was available. There could be useful synergies between quality control and CWC procedures and documents.

38. Four market trends were identified:

- Globalization of the chemical industry meant that "world-scale" plants were being established with a high degree of standardization, an increase in trade volume, and increasingly production in non-traditional countries.
- Specialization was also taking place as the competitive edge gains increasing importance, together with increasing outsourcing as chemical producers decide whether to make or buy. In addition, vertical integration was becoming less important with more companies becoming involved in production, processing and consumption of chemicals.
- Mergers and Acquisitions had been an increasing trend since the 1990's with reporting structures continually changing. This could make it difficult for CWC National Authorities to obtain the aggregate national data required for declarations and the information required for facility declarations. It also meant that there was a loss of knowhow in the industry, through such mergers and acquisitions, as to how to compile declarations and to receive inspections.
- Responsible Care was a world-wide initiative of the chemical industry which had recognised the obligation it had to continually improve environmental health and safety performance independent of and ahead of legal requirements. Consequently,

for transparency and accountability, periodic reports were being made by the chemical industry about performance regarding environmental protection, product stewardship, workers' safety and health, plant safety and transport safety.

39. The chemical industry in regard to the CWC was keen to see world-wide implementation with legislation in place and declarations being made globally. The industry believed that the technical and market trends did not pose major threats or opportunities to the objectives of the Convention. However, these trends do require flexibility on the sides of the inspectors, escort teams and chemical plant personnel alike, since several definitions and concepts of the Convention do not reflect the current situation in the chemical industry. Although industry considered that the OPCW needed to focus more on existing chemical weapons, it was evident that this view was not generally shared. After all over time the CWC regime should focus less and less on the destruction of chemical weapons as the Convention requirement was for all such weapons to have been destroyed within 10 years, with provision for possible extension to 15 years, after the entry into force of the Convention. The Convention is a non-proliferation tool and in looking ahead to the future over the next five to ten years, it is expected that greater emphasis will be placed on non-proliferation. Furthermore, there is a growing appreciation that the risk to the Convention is increasingly likely to come from unscheduled available chemicals.

40. The final presentation in this session considered how the First Review Conference could successfully reaffirm that all relevant scientific and technological developments are included in the basic prohibitions of the Convention. The approach which had been successfully adopted in successive Final Declarations at the BTWC Review Conferences both in regard to scope and to apprehensions regarding technological developments was first outlined. Then looking back at the developments during the past decade, attention was drawn to the increasing understanding about bioregulators, in the mid spectrum region, and to the way in which genomics, proteomics, bioinformatics and combinatorial chemistry have contributed to the huge increase in knowledge of cellular receptors leading to the possibility of identifying specific ligands for specific receptor subtypes affecting behaviour of interest to the military. Concern was also expressed about non-lethal weapons programmes and the effort being put into the study of calmatives. It was concluded that there would be benefit in the First Review Conference reaffirming that the Convention unequivocally covers **all** chemicals regardless of their origin or of their method of production and regardless of whether they are produced in facilities, in munitions or elsewhere and then stating that consequently, **as examples**, and not as an comprehensive list, toxins, prions, proteins, peptides and bioregulators and their biologically or synthetically produced analogues and components are covered. Likewise, there would be significant value in a reaffirmation that the undertaking given by States Parties in Article I applies to all relevant scientific and technological developments, *inter alia*, in the fields of chemistry, combinatorial synthesis, biological synthesis and the application of microreactors and automated process control.

### **Maximizing the Security Benefits from the First CWC Review Conference**

41. In this session, a presentation and subsequent contributions by participants from the OPCW, a National Authority and a national expert considered how the effectiveness of the verification regime and the implementation of the general purpose criterion could be improved.



42. Enactment of penal legislation was identified as being paramount to the effective implementation of the Convention as such legislation should ensure compliance with both Article I and Article VI, and hence implementation of the General Purpose Criterion as this is a responsibility of the States Parties. It was, however, a particular concern that only about 46% of the States Parties have reported to the OPCW on their measures taken in relation to enacting penal legislation and thus are known to be in compliance with Article VII of the Convention. It was therefore critical to redouble efforts to increase the enactment of penal legislation by all States Parties to the Convention. A further concern is the need to achieve universality of the Convention with particular efforts needing to be made in the Middle East and with North Korea.

43. In looking ahead to the First CWC Review Conference, it was recognised that the negotiators of the CWC had successfully struck a balance between non-proliferation and the protection of commercial interests. In considering the further development of the verification regime for OCPFs, it would be important to continue to maintain this balance. Particular aspects of the verification regime requiring attention were identified as follows:

- There is a need to establish agreed norms so as to avoid national variations in interpretation and to ensure a common standard in all States Parties.
- The OPCW needs to focus on inspection issues such as the methodology for verifying the absence of Schedule 1 chemicals and following the Review Conference the carrying out of a comprehensive review of the inspection manual.
- Other issues requiring attention included the definition of a plant site in the modern chemical industry environment and ensuring that requirements for the submission of declarations in relation to anticipated activities under Schedule 2 are implemented. The requirement to submit a declaration five days before the activity occurs -- and thus in the year in which the activity takes place -- applies when a Schedule 2 plant due to changed activities crosses a declarable or inspectable threshold.

44. The principal outcomes sought from the Review Conference were to ensure that all States Parties enact penal legislation and thereby ensure implementation of the general purpose criterion and for the OPCW to focus on issues that have universal impact on verification and ensure that disparate implementation is avoided.

45. Appreciations were then given by participants from the OPCW, a National Authority and a national expert on the implementation of the general purpose criterion and the verification regime. These included the following points:

- The importance of the General Purpose Criterion was emphasised. It was, however, recognised that this is very much part of the responsibility of States Parties to implement nationally.
- The Schedules could not provide a framework for the implementation of the General Purpose Criterion as it was very difficult indeed to safeguard security through the Schedules alone.
- National legislation is the key for the implementation of the General Purpose Criterion. It is of great concern that some States Parties have not included the General

Purpose Criterion in their national legislation, and thereby States Parties can be in breach of a basic obligation under the Convention.

- Technical seminars and regional seminars are needed to spread the awareness of the importance of the General Purpose Criterion. Technical assistance to States Parties may be a way forward.
- The practical issue was how to ensure that **all** States Parties enact penal legislation to implement the Convention and the General Purpose Criterion. The international concern about terrorism should provide an additional incentive. Article XI provisions should enable assistance to be provided to States Parties to enact national legislation.
- The OCPF regime is important as this provides for verification of other chemical weapon capable facilities in which chemical weapons could be produced. The selection process for OCPFs needs to be reviewed and a more intelligent process adopted.
- The requirement for nil returns for all Article VI activities needs to be agreed and implemented. Ideally, nil returns should be provided (a) that there is no declarable activity at all in a given year and (b) that a previously declared facility is no longer declarable.
- The Review Conference should endorse the increased emphasis on OCPF inspections and instruct the Executive Council to resolve details such as how to achieve a wider geographic spread and at the same time increase the probability of selecting facilities with greater capabilities, the disparity between the duration and the time that sampling and analysis requires, and to examine the exemptions for food and drink facilities.

## Conclusions

46. The Workshop addressing the scientific and technological issues of relevance to "Maximizing the Security Benefits from the First Review Conference of the Chemical Weapons Convention" was a stimulating, challenging and thought provoking event which enabled all present to focus on some of the key issues relevant to the First Review Conference to be held in The Hague starting on 28 April 2003.

47. The Workshop participants developed their appreciation that focus of the First Review Conference should be on steering the Convention -- in other words, the focus needed to be on what really matters -- the big issues. The temptation needs to be avoided of addressing what can and should be done by the Conference of States Parties or the Executive Council of the CWC. It would be important to focus on the reality of what can be achieved in a two week Review Conference and thus focus on the central issue of the goals of the verification regime.

48. It was recognised that the First Review Conference is being held some 10 years after the completion of the negotiations of the Convention and that the question that needs to be asked in regard to the fact that the CWC is a non-proliferation tool is whether the design is doing the job? The overall aim was aptly summarised in the Preamble to the Convention by the words *Determined for the sake of all mankind, to exclude completely the possibility of the use of chemical weapons*. The key issue was thus the ability to deal with risks to the Convention

posed by **past, present and future** chemical weapons. The heart of the Convention lies in the assurance that toxic chemicals are only developed, produced, transferred or used for purposes not prohibited under the Convention. This assurance is provided by the verification regime detailed in the Convention for Scheduled chemicals and for Other Chemical Production Facilities (OCPFs) which are not producing Scheduled chemicals and by the general purpose criterion in the Convention which defines chemical weapons as meaning *"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."* The Convention makes it clear that the States Parties to *ensure that toxic chemicals and their precursors are only developed, produced, otherwise acquired, retained, transferred, or used ... for purposes not prohibited under this Convention*, and thereby to implement the general purpose criterion.

49. The Workshop presentations made it clear that there are increasing risks from unscheduled chemicals as there are significant advances in technology and in biotechnology, and there were already a range of known unscheduled chemicals such as novichoks, mid-spectrum materials such as bioregulators, and calmatives which caused concern even though the general purpose criterion ensured that all such chemicals are embraced by the prohibitions of the CWC. The question was debated as to how likely is it that Scheduled chemicals would be chosen for breakout with the perception being that this was becoming less likely. Consequently, the First Review Conference needed to be alert to the dangers which might already be present but would certainly be there in future.

50. There was much discussion about the Schedules, the OCPF regime and the implementation of the general purpose criterion and its importance both in respect of the Convention and in regard to protection against chemical terrorism. In respect of the Schedules the appreciation was that it was not yet timely to change them even though there was indeed a case to add novichoks. However, it would be important for the Review Conference to reaffirm the importance of the ability to change the Schedules and a start could usefully be made to developing and reviewing the criteria for such changes. In regard to the OCPF regime, it was recognized that the crafters of the Convention had quite deliberately given the First Review Conference the remit to review this regime and to make recommendations to improve the effectiveness. Finally, in respect of the general purpose criterion, it was recognised that the central importance of this needs to be reaffirmed by the Review Conference and that all States Parties need to have enacted overarching penal legislation to implement this. There was a need for States Parties to be seen to have implemented the general purpose criterion and to share best practice with other States Parties.

51. Although the general purpose criterion is the heart and soul of the Convention which provides the best protection against new agents in respect both of the Convention and in providing protection against chemical terrorism, the situation in regard to the enactment nationally by States Parties of the essential overarching penal legislation to implement the general purpose criterion and the Convention was grave. Although all States Parties are required to report such legislation to the Technical Secretariat, the current situation is abysmal and there could well be benefit in the OPCW mounting a similar campaign to the one which had successfully remedied an equally abysmal situation regarding the submission of initial declarations by States Parties. It was clear that this was an issue that the Review Conference needed to address.

52. In respect of the OCPF regime, it was apparent that the focus of inspections should increasingly be to verify that activities are consistent with the information to be provided in

declarations and less on the verification of the absence of any Schedule 1 chemical given the perception that Scheduled chemicals were becoming less likely to be selected for breakout. The First Review Conference needs to be seen to have successfully made recommendations to improve the effectiveness of the regime -- and to be seen to have steered the ship so as to ensure the future health of the purpose and object of the Convention.

53. It was recognized that the Review Conference had a number of tools for steering the Convention which includes extended understandings in the form of affirmations or decisions, changes to the schedules or to the Annexes in regard to *matters of an administrative or technical nature*, or amendments to the Convention although the latter is not recommended. The value of extended understandings was recognised as these were both available and effective.