

# CHEMICAL WEAPONS CONVENTION BULLETIN

News, Background and Comment on Chemical and Biological Warfare Issues

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## NEW TECHNOLOGIES AND THE LOOPHOLE IN THE CONVENTION

The Chemical Weapons Convention in no way limits use of tear gas or other temporarily disabling chemicals by police forces for purposes of domestic riot control. But the language used to exempt other law-enforcement purposes has created an ambiguity in the heart of the Convention. If states parties come to act on differing interpretations of the ambiguity, even if they do so in good faith, the stability of the treaty regime will suffer, perhaps catastrophically. Here is an issue which surely has to be resolved before the Preparatory Commission completes its work.

What is at stake is the ability of the treaty regime to withstand technical change. For new chemical agents and technologies have begun to emerge whose attractions for weapons purposes may eventually drive them through the loophole which the ambiguity has created.

The Convention accommodates the advance of science by being built upon the 'general purpose criterion' enunciated in Article II.1(a). This states that the "chemical weapons" to which the strictures of the Convention apply include all "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". So even toxic chemicals whose existence is not yet known are covered.

In determining whether an activity involving a toxic chemical or precursor is actually banned by the Convention, the criterion to be applied is the purpose of the activity. Article II.9 lists the purposes that are not prohibited, such as industrial, agricultural, research or medical purposes. Not only, then, does the general purpose criterion protect the Convention against technical change; it also protects legitimate uses of all toxic chemicals and chemicals from which they can be made. It is the heart of the Convention.

Article II.9(d) states that "law enforcement including domestic riot control purposes" are among those purposes not prohibited. This fully protects the use of chemicals such as tear gas for domestic riot control. But what is "law enforcement"? Nowhere in the Convention is it defined. Whose law? What law? Enforcement where? By whom?

As to "domestic riot control purposes", Article II.7 defines a "riot control agent" as "any chemical not listed in a Schedule, which can produce rapidly in humans sensory ir-

ritation or disabling physical effects which disappear within a short time following termination of exposure". In contrast, the Convention offers no definition of what the chemicals permitted for law enforcement other than riot-control might be. Its only provision, in Verification Annex VI.2, is that chemicals listed in Schedule 1 may not be used for law enforcement.

From these two absences of definition the ambiguity emerges. Is the Convention really to be read as allowing any non-Schedule-1 toxic chemical or precursor to be developed, produced, weaponized, stockpiled or traded, so long as it is said to be for "law enforcement purposes"?

The identity of chemicals which states parties hold for riot-control purposes will have to be disclosed in the national declarations under Article III. For chemicals intended for law-enforcement purposes other than domestic riot control, there is no provision for any such transparency. The Convention does not even require disclosure of their chemical names. Their identity, as well as that of munitions and devices for using them, may all be kept secret.

Compounding the problem is Article I.5, obliging states parties "not to use riot control agents as a method of warfare". The singling-out of temporarily disabling chemicals in this fashion might be taken by some to mean that the Convention imposes no prohibition against military applications of such chemicals in the grey area between domestic riot control, which is clearly permitted, and actual use as a method of war, which is clearly prohibited. This interpretation would have the effect of exempting temporarily disabling chemicals from the general purpose criterion.

Alternatively, the explicit prohibition against temporarily disabling chemicals as a method of warfare might be taken as extra insurance that under no circumstances may

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what the Convention says about “law enforcement” and how it defines “chemical weapon” be interpreted to permit the use of such chemicals as weapons of war: an additional emphasis reflective of history, in no way a limitation of the general purpose criterion.

Support for the latter view comes from Article II.2, which provides the Convention’s definition of “toxic chemical” and includes within it, not only chemicals that cause death or permanent harm, but also chemicals that cause “temporary incapacitation”. Riot control agents according to Article II.7 (quoted above) work by producing transient disabling physical effects, in other words temporary incapacitation. This places temporarily disabling agents in the same category as other toxic chemicals, not in a different one, clearly subject, therefore, to the general purpose criterion.

Nevertheless, with no definition of “law enforcement” or of the chemicals that are permitted for it, there is dangerously ample room for divergent interpretations of the Convention. An early indication of which way states parties decide to go will come in the declarations required under Article III, which are to be made within 30 days of the Convention entering into force for the party concerned. For example, if a state happens to have holdings of, say, 105-mm artillery rounds, 120-mm mortar projectiles or 128-mm rockets up loaded with an unscheduled chemical such as the irritant CS, will it declare and destroy them in accordance with the “chemical weapons” provisions of Article III.1(a) — or the “abandoned chemical weapons” provisions of Article III.1(b)? Under the general purpose criterion, the only justification for not doing so would be to maintain that they are intended for “law enforcement”. Again, if a state happened for a while after 1946 to possess an overseas test-area used for evaluating, say, the tactical potential of the irritant agent BBC, will it declare the facility in accordance with Article III.1(d) or will it instead keep silent?

Can the negotiating history of the Convention offer insight into the problem? It can show how the ambiguity arose. Some, by no means a majority, of the negotiating states wished to protect possible applications of disabling chemicals that would either go beyond, or might be criticized as going beyond, applications hitherto customary in the hands of domestic police forces. Other negotiating states, in contrast, wanted the line held at “domestic law enforcement and domestic riot control”, as CD/CW/WP.400 (the Chairman’s original “vision” text of the Convention) put it, excluding applications found during, for example, the Vietnam-War employment of CS. And one state needed to protect its practice of using toxic chemicals to inflict capital punishment as a means of law enforcement. The pressure of the August 1992 negotiating deadline called forth the political accommodations which find expression in the ambiguity of the final treaty text. There was simply no time to secure anything better.

The Preparatory Commission, too, has a deadline, but at least it offers a second chance of resolving the ambiguity — of removing a grave weakness from the core of the Convention — thus strengthening it against advancing science and technology. There may be no further opportunity. Giving additional immediacy to this concern is the rather widespread growth of police and military interest in the possibilities of immobilizing chemicals for such purposes as controlling disturbances, capturing fleeing criminals, or engaging enemy forces intermingled with noncombatants. This interest is exemplified by the current attempts to exploit new science for just such applications. Once immobilizing chemical weapons become available, and if there is still no uniform understanding of their status under the Chemical Weapons Convention, the temptation to introduce them into combat may prove difficult to resist. Could the Convention then survive?

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## Building the Organization for the Prohibition of Chemical Weapons

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**Actions by the PrepCom** The fifth session of the Preparatory Commission for the Organization for the Prohibition of Chemical Weapons (OPCW), held in The Hague during 13–17 December, handled its most complex challenge to date, the adoption of a budget and work program for the coming year, with remarkable grace. Approval of the Commission's 1994 plans was the culmination of the year's work by some fifteen expert groups and two working groups charged with planning for every aspect of entry into force of the Chemical Weapons Convention (CWC), which could occur as early as January 1995. The Commission's fifth plenary session was the shortest yet. It ended after only four of the five days which had been allocated for it and agreed on its initial 1994 budget of \$18.1 million after only three days of debate.

The 1994 budget and planning exercise was a demanding task for the PrepCom, which had opened its inaugural session just ten months earlier, and its Provisional Technical Secretariat (PTS), most of whose staff had been in place for less than six months. The 1994 planning process required the synthesis of an enormous number of estimates concerning the material, staffing and financial needs of both the PrepCom and the future OPCW. These estimates had to be derived from intricate calculations concerning the scope of the OPCW's future verification tasks, involving as yet undeclared chemical industry and chemical weapons related facilities, and assumptions about the likely timetable for entry-into-force of the CWC and the Russo–US Bilateral Destruction Agreement on chemical weapons.

That the PrepCom was able so smoothly to agree on its plans for 1994 was due largely to the efforts of PTS staff and the Commission's Expert Group on the 1994 Programme of Work and Budget which had laboured overtime in October and November, extending its meetings, which had been due to conclude on 5 November, through to the 18th of that month. By the time of the December plenary it appeared that no delegation was prepared to question the delicate set of understandings, predictions and compromises achieved by the Expert Group.

The Commission's 1994 budget and organizational plans are divided into two parts. Phase I, for which a budget of \$18.1 million was authorized, involves the essential organization-building and planning tasks which the PTS and PrepCom will need to address throughout 1994. These include the development of training programmes, detailed declarations of CW-related capabilities and inspection guidelines as well as assistance to states in planning for CWC implementation.

Phase II of the 1994 budget, for which an additional \$11.6 million was allotted, will begin six months prior to

entry into force of the Convention. This could be as early as 18 July 1994 or as late as when the sixty-fifth state ratifies the CWC (conceivably not in 1994 at all). Key tasks during this phase include (1) the training of inspectors, (2) a rapid expansion of the PTS's administrative infrastructure, (3) the acquisition and testing of the organization's laboratory and on-site testing equipment and procedures, (4) preparations for the first meeting of the OPCW's Conference of States Parties, including its first budget and program of work, and (5) development of the OPCW's stockpile of protective equipment and resources for humanitarian assistance to be made available to states parties in case of the use or threat of use of CW against them.

As of early January 1994 the PTS was endowed with a staff of 78, representing 34 nationalities. Under Phase I it is to grow in 1994 to 120 staff members, with most of the growth in the verification and administrative divisions. By the end of Phase II, staff will number 225, with an additional 140 inspectors and inspector assistants 'on line' in authorized training programs and ready to undertake verification activities upon entry into force. These staff numbers represent a sharp reduction from those contained in proposals before the PrepCom in September 1993. At that time the projected size of the PTS at the end of phase II was 294 PTS staff and 180 inspectors.

Other notable actions by the fifth PrepCom plenary include:

- A decision to exclude from further consideration the site originally offered by the Dutch authorities for the future OPCW headquarters, due primarily to security concerns. Negotiations will continue on options for temporary OPCW accommodation and on an alternative site for permanent facilities.
- A decision that the future OPCW laboratory, while legally to be considered part of the OPCW Building, should for safety reasons be located at another site close to The Hague. A likely location on the premises of the Prins Maurits Laboratory near The Hague is currently being evaluated to determine its suitability.
- The establishment of a Finance Group, composed of national experts on budgetary and administrative matters, to provide advice to the Commission on financial and budgetary matters. The group will be a 'core group' of the Expert Group on Program of Work and Budget through which it will report to the PrepCom.
- Adoption of a General Training Scheme for inspector candidates and other OPCW staff which will consist of three six week modules: 'Basic Course', 'Specialist Application Courses' and 'Inspection Training'. Inspector and inspector-assistant candidates will be employed by

the PTS prior to beginning their training, at 75% of their future salary, and will be confirmed in their employment upon successful completion of their training.

- A decision to invite representatives of industry to a second meeting with the Expert Group on Chemical Industry Facilities, tentatively scheduled for April 1994. It also asked the PTS to appoint contact officers on issues of interest to industry, to consider regular industry briefings on such issues and to publish updates after each meeting of an Expert Group dealing with matters of concern to industry.
- Agreement that a data bank on protection against chemical weapons, accessible to states parties by electronic means, will be established in the library of the OPCW's Technical Secretariat (TS). Only a limited amount of protective equipment is to be stored by the OPCW itself. The bulk of assistance to a state party attacked with CW or threatened with such an attack will come from the stocks of member states pledged to the OPCW for this purpose.
- Establishment of a standing Committee on Relations with the Host Country, open to all member states. The Committee is intended to expedite decisions concerning interim and permanent accommodation for the PrepCom and OPCW, legal matters and other relations with the Dutch authorities.

The primary contentious issue at the December plenary was again the matter of geographic distribution of professional posts within the PTS. Although many states commended the Executive Secretary, Ian Kenyon, for having improved the regional balance in the Secretariat through recent appointments, several insisted that further statements on the matter be included in the PrepCom report. These statements encourage the Executive Secretary to continue efforts to redress the imbalance which has tended to favour the group of 'west European and other states'.

Pursuant to a decision of the previous PrepCom plenary the Executive Secretary reported that he had signed the Headquarters Agreement with the Dutch Government on behalf of the Commission on 8 December. The agreement covers the status of the Commission as an international organization in the Netherlands and specifies the privileges and immunities to be accorded to the Commission, members of the PTS staff and governmental representatives to the PrepCom.

The December session of the PrepCom was attended by 81 member states, just four more than needed for a quorum. Efforts by the PTS to promote greater participation in plenaries, through contacts with embassies in The Hague and Brussels and visits to capitals, have continued. The Executive Secretary, as authorized by the fourth plenary, has also been encouraging non-signatory states to sign the CWC. During autumn 1993 he pressed the case for CWC signature in a presentation to the UN General Assembly and in letters to non-signatory states.

At the close of its session the Commission appointed Ambassador Grigory Berdennikov, representative of the Russian Federation to the Conference on Disarmament in Geneva, as its Chairman for the period from 8 February through 7 August 1994. Representatives of Brazil, Bulgaria, Indonesia, Tunisia and the United States will serve as Vice-Chairmen for the same period.

The next plenary session of the PrepCom will be held in The Hague during 11–15 April.

**Actions by Member States** The last months of 1993 provided growing evidence of states taking concrete steps towards implementation of their CWC obligations. In capitals, legislation was being drafted, ratification debates scheduled and training courses for National Authority staff and international inspectors developed. In some cases training courses were already underway.

At the time of the fifth PrepCom session in mid-December some twenty submissions had been received following the PTS Executive Secretary's request of 19 August to member states for information on the establishment of National Authorities, ratification plans and the preparation of implementing legislation. Although many merely indicated that the government was studying these matters others provided new information.

In most of the responding states the National Authority function will be assigned to an existing Ministry. This is the case in Belgium, Brazil, France, Germany, Iran and Sweden which have designated their ministries of foreign affairs. The Netherlands and United Kingdom have designated their ministries of trade and industry while Argentina has assigned the job to an inter-ministerial working group and the Russian Federation has chosen the Presidential Committee on Convention-related Issues of Chemical and Biological Weapons. Australia, Cuba, the Czech Republic, India and Turkey intend to set up national authorities as independent agencies.

South Africa has announced that it will name its inter-ministerial Council for Non-Proliferation of Weapons of Mass Destruction as national authority, while New Zealand currently considers its Ministry of Foreign Affairs and Trade as the most likely spot. The United States has publicly presented plans for a two-tier National Authority, with its Interagency Working Group on Arms Control, chaired by National Security Council staff, as the decision-making body and the Office of the National Authority, to be located in the Arms Control and Disarmament Agency, as the executive arm.

Verbal reports have suggested that implementing legislation is currently being prepared in several dozen capitals and that many other states are in the process of examining samples of such legislation from other states.

A report produced by the PTS in mid-October lists twelve countries which had reported currently functioning inspector training programs or plans for such programs.

The content of most of these courses is intended to fit into the PrepCom's General Training Scheme for future inspectors and national authority staff. Finland, France, Germany, Mexico, Poland, Sweden and the UK (in co-operation with the Netherlands and Switzerland) were reported to have already started courses by late 1993. Austria, Romania and Switzerland had announced plans to begin offering courses in 1994. The Netherlands and South Africa intend to offer courses in conjunction with the PrepCom's training scheme but have not yet set their starting dates. Many of these courses are open to foreign nationals and several are specifically oriented towards developing a cadre of CWC experts from among developing countries.

Four additional states, Djibouti, the Maldives, Guyana and Turkmenistan, signed the CWC between the September and December PrepCom Plenaries, bringing the total number of signatories to 154. Although Norway, Saudi Arabia, the United Arab Emirates and perhaps others have reportedly ratified the Convention, this had not been notified to the Depositary, leaving the official tally at 4 out of the 65 required for entry into force.

In the United States the CWC was sent to the Senate for its advice and consent to ratification on 23 November. Ratification hearings are expected to begin in late March 1994. Actual ratification is likely to be linked to ratification of the separate US-Russian agreement on destruction of both countries' stocks of chemical weapons and verification of such destruction: the June 1990 Bilateral Destruction Agreement.

The European Union (EU) is reported to have considered but dropped proposals for a coordinated approach to ratification by its member states, leaving each state free to ratify according to its own schedule. The EU has nonetheless initiated the process of harmonizing CWC-related reporting procedures, criminal codes and import-export regulations among its twelve member-states.

One action many member states failed to take in 1993 was paying their assessed contributions to the PrepCom. As of 10 December, 75 states, comprising nearly half the membership of the Commission, had failed to pay their assessed 1993 dues. Fortunately these states account for only 11.9 percent of the budget. The matter may, however, reflect a more worrying lack of political attention to states' CWC commitments.

Despite the laggardly approach to payments on the part of many members the Executive Secretary projected a hypothetical end of year surplus of some \$2.76 million against the Commission's 1993 budget of \$8.84 million, assuming full payment of \$1.5 million in unpaid dues. The surplus was attributed largely to delays in recruitment of staff, contributions towards certain costs by the Dutch OPCW Foundation and interest income.

#### **Progress in the Provisional Technical Secretariat**

With the arrival in December of Mr John Makhubalo of Zimbabwe as Director of Technical Co-operation and As-

sistance all five divisional director posts in the PTS have been filled. Additional arrivals at the senior level since the fourth session of the PrepCom were Ms. Marta Laudares of Brazil as Head of the Technical Support Branch in the Verification Division and Ron Nelson of the US as Planning Officer in the Office of the Executive Secretary. At lower professional levels appointments had been offered to nationals of a number of states not previously represented on the staff: Algeria, Belarus, Chile, Indonesia, Norway and the Republic of Korea.

The PTS hosted a seminar on National Implementation held just after the fifth PrepCom session on 18 December. This event brought together some 133 participants from 56 countries and several research institutes and nongovernmental bodies. At the seminar the Technical Co-operation and Assistance Division of the PTS distributed a paper entitled 'Tasks of the National Authorities of Non-CW-Possessor States Parties' and an implementation 'handbook' for 'Non-Possessor States Without a Declarable Chemical Industry'. The latter was intended to clarify the limited obligations of the many signatory states which possess neither CW nor a significant chemical industry. The seminar was useful in shifting attention away from the intricate organizational and regime building debates with which the PrepCom has concerned itself and towards the more limited set of tasks with which most signatory states need to be directly engaged. The PTS intends to conduct additional seminars on national implementation issues in 1994.

At the PTS implementation seminar in December a non-governmental group of international legal experts, under the auspices of the Pugwash Movement and Parliamentarians for Global Action, presented a *Manual for National Implementation of the CWC*. The Manual provides detailed guidance on legal issues which states will need to consider as they draft legislation. The group, led by DePaul University law professor Barry Kellman, is considering future work on international law aspects of the CWC.

The PTS's legal division also produced for the national implementation seminar guidance on 'Some Legal Aspects of National Implementation of the Chemical Weapons Convention'. Due to the variety of national legal systems and regulatory procedures the PTS will avoid attempts to prepare model legislation. An example of possible implementing legislation has however been circulated by Australia to CWC member states.

In cooperation with the Polish Government the PTS hosted a regional seminar in Warsaw for officials from the Eastern European group of CWC signatory states. The seminar, on 'National Authorities and National Implementation Measures for the CWC' was attended by 56 participants. The programme included presentations by PTS staff, government officials and representatives of Harvard Sussex Program and the Stockholm International Peace Research Institute (SIPRI). The PTS plans similar seminars in other regions during 1994. One is scheduled to be held in Bangkok during 9-10 May; another, in Brno during 1-2 June.

During the autumn the PrepCom's Executive Secretary spoke on behalf of the Commission to the UN General Assembly and visited officials and CWC related facilities in France, Germany, Iran, the Russian Federation, the UK and the US. He also met with officials of the International Civil Aviation Organization in Montreal to discuss the air transport of samples of toxic chemicals for CWC verification purposes. He intends to visit a number of Asian states in early 1994.

The Executive Secretary reported to the fifth PrepCom plenary that the PTS had begun work, in a joint project with the Harvard Sussex Program, on an International Information Project on Implementation of the CWC. A Conceptualization Conference for this project was held in The Hague 6–7 November involving PTS staff and the HSP Board, staff and associates. Information materials produced under the project will be used to assist national officials in planning for CWC implementation and may be useful in interpreting the CWC to parliamentarians and others involved in the CWC ratification process. The project will ultimately produce an integrated 'Guide to Implementation of the CWC'.

**Progress in Other PrepCom Structures** Fourteen Groups of Experts convened in The Hague between the fourth PrepCom meeting in September and the fifth in December. Four had received their mandate from Working Group A on administrative matters and ten from Working Group B responsible for Verification issues. A summary of the inter-sessional work of each Expert Group and its mandate for work through April 1994 is presented below. The first four groups are those reporting to Working Group A.

**1994 Program of Work and Budget** (Chair: Jorge Morales of Cuba). The primary results of this group's work are reported above. The group also recommended improvements to the Commission's working methods and proposed that work on the Program of Work and Budget for 1995 begin in the second quarter of 1994. The expert group's chairman, who also served as acting chairman of Working Group A, was given considerable credit for the smooth process of adopting the Commission's 1994 plans. This group reconvened from 28 February to 4 March to establish the Commission's Finance Group.

**OPCW Building** (Chair: Radoslav Deyanov of Bulgaria). This group generated the proposal, accepted by the PrepCom, that the original site offered by the Dutch government for a permanent OPCW headquarters be excluded from further consideration. The Netherlands, in accordance with its bid to host the OPCW, is committed to providing a new tailor-made building in The Hague for the organization. Three buildings for possible interim accommodation for the PTS and the future Technical Secretariat of the OPCW are being considered, since a permanent OPCW building is not likely to be available until well after entry into force. The Expert Group has been asked to bring recommendations concerning both interim accommodation and a permanent OPCW building to the April 1994 PrepCom meeting. At its November meeting the Expert Group

deleted the draft requirement that a future conference facility for the OPCW's Executive Council contain a balcony facility for 'press and public', including nongovernmental bodies. Current specifications call for a separate 'Press conference room in a peripheral part of the building (close to the entrance hall)'. The Group reconvened during 21–25 February.

**Data Systems** (Chair: Tibor Toth of Hungary). This group continued to refine the design for the OPCW's Information Management System and continued work on formats for declarations required under the CWC. These formats are now to be considered by other expert groups which will send their views to the Data Systems group, scheduled to meet again during 7–11 March. The Group is also reviewing a Finnish national offer of database for the OPCW and will bring its recommendation on this to the next PrepCom plenary.

**Staff and Financial Regulations** (Chair: Sarvajit Chakravarti of India). This body brought to the Commission recommendations for the composition and functioning of the Finance Group, which in the future will be the core group of this experts group. The group is also considering whether in the future special incentives will be required to attract and retain highly qualified professional staff and, if so, what changes in staff regulations and rules this may entail. The Executive Secretary has been asked to prepare a report on this subject. The Group has also been asked to prepare regulations for the operation of the OPCW's voluntary fund for assistance to states threatened or attacked with CW. It met again from 31 January to 4 February.

**Chemical Industry Facilities** (Chair: Adam Noble of the United Kingdom). Work on declarations requirements for industry facilities continued in this body. The group requested the PTS to begin preparation of an Inspection Manual for industry and considered the level of inspections which will be required at specific types of facilities. It also produced the proposals, described above and adopted by the PrepCom, for improved communications with industry. At its session during 10–21 January the group evaluated the risk posed by facilities producing schedule 2 chemicals, developed criteria for determining the frequency and duration of inspections and developed formats for inspection reports.

**Chemical Weapons Production Facilities** (Chair: Graham Cooper of the United Kingdom). This group developed procedures, adopted by the Commission, for the closure or inactivation of chemical weapons production facilities after entry into force and proposed that risk assessments be made of each such facility by the OPCW for use in determining its priority in the scheduling of inspections. Among the topics addressed at its meetings 17–28 January were the conditions under which CW production facilities may be converted for other uses and the finalization of declaration requirements for CW production facilities.

**Training** (Chair: Behnam Behrooz of Iran). Participants finalized the contents of the three training modules of the General Training Scheme which was approved by the fifth

PrepCom plenary. They also considered training needs of officials from National Authorities and developed guidelines for certification of national training courses and for cost-sharing of inspector training costs between national courses and the PTS/TS. The Executive Secretary has been requested urgently to develop criteria for certification of national training programs and for selection of inspector trainees. The later are to be circulated to member states by 15 February. For planning purposes the 1994 budget foresees the selection of the first 160 inspector candidates being completed in May 1994, for the commencement of training in August, assuming entry into force in January 1995. This group again met during 7–11 February.

*Equipment* (Chair: Henk Boter of the Netherlands). This body met in October in time to provide a list of inspection and laboratory equipment to the Expert Group on the 1994 Program of Work and Budget. The Commission also accepted the group's recommendations that the OPCW laboratory, expected to be located at the Prins Mauritus Laboratory near The Hague, should achieve a 'minimum capability' by March 1994 and should be prepared to fully support OPCW operations one month before entry into force. The group reconvened during 24–28 January to consider equipment procurement, to develop procedures for establishing 'designated laboratories' for OPCW analysis and to address issues related to the transportation of equipment and its inspection at the point of entry during inspection visits.

*Challenge Inspections* (Chair: Andrea Perugini of Italy). This group discussed at its November meeting issues of securing the site of a challenge inspection, managed access inside the site and procedures for sampling and analysis. Its work did not lead to recommendations for decision action by the PrepCom. In addition to continuing work on the above matters the fifth PrepCom plenary mandated the group to prepare formats for preliminary, draft and final inspection reports, with particular attention to issues of confidentiality. Its most recent session was held from 28 February to 4 March.

*Safety Procedures* (Chair: Raymond Fatz of the United States). Plans for the OPCW's future health and safety regulations occupied much of this group's time. It also finalized the structure and employment schedule of the PTS health and safety unit to be established in 1994. The group has been asked to continue work on these regulations and to prepare an outline for a specialist training course on health and safety to be part of the PTS/OPCW General Training Scheme. It met again during 14–18 February.

*Chemical Weapons Storage Facilities* (Chair: James Knapp of Canada). Work in November by this group resulted in recommendations to Working Group B, subsequently adopted by the PrepCom, concerning declarations of storage facilities and the amount of chemical weapons which may be stored at a CW destruction facility. Future work will be done on model facility inspection agreements with the OPCW, criteria for determining the adequacy of bilateral agreements on the inspection of storage facilities,

sampling techniques and inspection report formats. The group addressed these matters during 7–11 February.

*Old and Abandoned Chemical Weapons* (Chair: Peter Krejsa of Austria). The first meeting of this body in November concentrated on declaration formats for old and abandoned CW stocks and criteria for determining the risk to the CWC of such stocks. Working Group B endorsed the groups recommendation that the PTS Legal Advisor provide an interpretation on the degree of verification required for CW stocks produced between 1925–46 and that the Executive Secretary assess the financial implications of each interpretation of this issue. The Working Group requested states having data which could assist in the preparation of declarations regarding old and abandoned CW to make it available to the Secretariat. The Group was asked to resolve its outstanding issues and to finalize its work at its meeting from 31 January to 4 February.

*Chemical Weapons Destruction Facilities* (Chair: Patrick Dewez of France). This group focused its efforts on declaration formats for planned and completed CW destruction processes, deadlines for the submission of detailed information on CW destruction facilities, criteria for determining when complete destruction of chemical weapons has occurred and inspection procedures for destruction facilities. Through Working Group B the PTS Legal Advisor was asked for an opinion on the acceptability of a CW destruction process which results in a chemical agent listed on schedule 2 of the CWC's list of chemical presenting a threat to the purposes of the Convention. The group faced an expanded agenda when it returned to work during 7–11 March.

*Technical Cooperation and Assistance* (Chair: Sarvajit Chakravarti of India). The report of this group to Working Group B encouraged the PTS to actively assist member states in arranging training courses for personnel from National Authorities and asked the Expert Group on Training to develop a course tailored to this need. The group's recommendations concerning an OPCW database on CW protection and a voluntary fund for assistance, mentioned above, were approved by the PrepCom. The Commission also endorsed the group's recommendations concerning openness in the exchange of information and material required for CW protective purposes among states parties. When it reconvened during 14–18 February, the group considered measures to promote the exchange of chemicals for peaceful purposes and to promote assistance to member states threatened or attacked with CW.

New expert groups were commissioned to meet in the period leading up to the sixth PrepCom session in April 1994 to address the following topics: Confidentiality (10–14 January and 14–18 March), Transitional Arrangements (between the PrepCom and OPCW, 21–25 February), OPCW Headquarters Agreement (28 February–4 March), and Declarations and Model Facility Agreements (14–25 March).

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*This review was written by Peter Herby.*

What follows is taken from the CBW Events data-base of the Sussex-Harvard Information Bank, which provides a fuller chronology and more detailed identification of sources. The intervals covered in successive Bulletins have a one-month overlap in order to accommodate late-received information. For access to the data-base, apply to its compiler, Julian Perry Robinson.

**1 November** The Treaty on European Union enters into force.

**1 November** In Washington, Secretary of Veterans Affairs Jesse Brown announces that his department will soon begin a pilot programme to test people who served in the Gulf War "for health problems that may be related to their exposure to chemical agents". He says that this is because of the Defense Department's "recent acknowledgement that very low concentrations of chemical agents were detected by the Czechoslovakian military" during the war [see 28 Oct].

The Department of Veterans Affairs has recently contracted with the National Academy of Sciences for a study of what effects service in the Gulf War might possibly have had on soldiers' health. {*Washington Post* 2 Nov}

**1–5 November** In The Hague, the OPCW Preparatory Commission Group of Experts on OPCW Building reconvenes and produces a fourth interim report. {PC-V/A/WP.4}

**2 November** In Pyongyang, *Nodong Sinmun* reports that South Korean authorities decided, at a recent "meeting of departments concerned", to possess chemical weapons and to submit the plan for doing so to the National Assembly next year for its endorsement. Repeating this allegation some days later, the newspaper adds: "As already exposed, chemical weapons have been produced and stockpiled from long ago in South Korea by the successive rulers. There are more than 40 underground nuclear and chemical weapon depots in the Mount Kyeryong area, South Chungchong Province, and near Suwon, Kyonggi Province, which keep large quantities of binary chemical weapons. Former South Korean dictators built ten odd poison gas factories in South Korea and produced many chemical weapons there." {KCNA 2 Nov in JPRS-TND 17 Nov; KCNA 8 Nov in FBIS-EAS 9 Nov} [See also 28 Jan and 27 Sep]

**2 November** In Russia, the presidential National Security Council approves a document setting out guiding principles for Russian armed forces in the post-Soviet world, *Basic Provisions of Russian Federation Military Doctrine*. The new doctrine no longer sees other states or regional security systems as threatening the vital interests of Russia, nor does it identify any potential enemy. Instead it sees small local conflicts as the main source of military danger. Approval of the document had been delayed by controversy over its provisions for using troops for internal security. Such use, in certain specific instances, is authorized in the final version, one of the specific instances comprising attacks on nuclear or chemical installations. {*New York Times* 3 Nov; *Krasnaya Zvezda* 4 Nov in FBIS-SOV 4 Nov}

**2 November** In Germany, Federal Economics Ministry official Hans Dieter Hermann, addressing a meeting of experts in Frankfurt, states that there are chemical weapons programmes

in Syria, Iran, Libya and Pakistan, and that these countries are increasingly attempting to set up their own production plants, by methods which he describes. {DPA 2 Nov in JPRS-TND 17 Nov}

Chancellery Minister Bernd Schmidbauer, interviewed about proliferation later in the month for *Focus* magazine, speaks of an "explosive" situation between India and Pakistan, adding that "both states are able to produce chemical combat agents". {*Focus* 22 Nov in JPRS-TAC 16 Dec}

**2 November** In the US Senate, the Committee on Veterans' Affairs holds, in lieu of a formal hearing, a staff forum on Future Research on Agent Orange. This is in follow-up to the hearing of 27 July [q.v.] at which the National Academy of Sciences released its first report pursuant to the Agent Orange Act of 1991 [see 6 Feb 91], a report which made several recommendations for further study. Among the testimony received from a panel of six medical doctors and scientists is that of Dr Arnold Schechter, in which he advocates government-sponsored research in Vietnam on Agent Orange health effects by joint US–Vietnamese medical teams. {S.HRG.103-302}

**3 November** President Clinton signs the instrument of US ratification of the Treaty on Open Skies, having received the unanimous advice and consent of the US Senate on 6 August. {*US Department of State Dispatch* 15 Nov} The United Kingdom ratifies on 19 November, and deposits its instrument of ratification with Canada on 8 December. Entry into force will happen once 20 states have done likewise (the UK was the eleventh) and 60 days have subsequently elapsed. {UK FCO *Notes on Security and Arms Control* 1993 no 11}

**3–4 November** In Moscow, the Multilateral Working Group on Arms Control and Regional Security of the Middle East Peace Process meets for its fourth session [see 17–19 May]. {*Jordan Times* 3 Nov}

**4 November** Iraq has secretly transferred stocks of chemical weapons out of the southern marshlands, according to a clandestine radio station, which identifies the desert area into which it says the stocks were moved. {Voice of Iraqi Islamic Revolution 4 Nov in JPRS-TND 17 Nov}

**4 November** UNSCOM is preparing to investigate the reports that Iraq has been using chemical weapons in its southern marshlands [see 22 Oct], Executive Chairman Rolf Ekéus says in New York. UNSCOM investigators will first travel to Iran to interview refugees and perhaps take blood samples from them, and then, if prima facie evidence of a CW attack at a particular location is thus found, another team of investigators will travel to that location to take soil samples and search for further evidence. {*Daily Telegraph* 5 Nov; *New York Times* 7 Nov}

**5 November** The Netherlands, by a communication dated 29 October today copied to all member states of the OPCW Preparatory Commission, offers an alternative site in The Hague for the OPCW permanent building. {PC-V/2} This new offer follows representations about inadequacies of the 'Peace Tower' site by the Central Station which the Netherlands had originally offered in its bid to host the Organization. The new site, Catsheuvel, beside the Netherlands Congress Centre, had been under detailed consideration in the OPCW Building Experts' Group and its Task Force [see 1–5 Nov]. {PC-V/A/WP.2; PC-V/A/WP.4}

**5 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Programme of Work and Budget fails to achieve consensus at the end of its allotted two-week work period [see 25 Oct–5 Nov] but decides to continue in a series of formal and informal sessions. {PC-V/A/WP.3}

**7 November** Libyan leader Mu'ammār al-Qadhafi, in the course of a televised contribution to a discussion on economics at Qar Yunis university, appears to be ordering 10,000 Thai workers out of the country because of statements by some of them that the Tarhuna Great Man-Made River project on which they were working was intended by Libya for a poison-gas factory. {Libyan TV 9 Nov in *BBC Summary of World Broadcasts* 9 Nov} This is widely reported to be retaliation for Thai withdrawal, under US pressure, from the Tarhuna project [see 14 Oct]. {*New York Times* 10 Nov} The television statement follows reports that Libyan authorities had decided to expel the 2000–3000 Thai workers in Rabta and that they had ordered the Korean company Dongah Construction, working in the Tarhuna hills, to lay off 5000 Thai employees it had in the country; Dutch, Italian and Swiss companies operating in Libya are also reportedly under instructions to lay off their Thai employees; so 40 percent of the 25,000 or more Thais in the country apparently face expulsion. {*Matchon* 4 Nov in FBIS-EAS 4 Nov; *Bangkok Post* 9 Nov in FBIS-EAS-93 4 Nov}

Two days later, 187 Thai workers return home via Tunis. {AFP in *International Herald Tribune* 10 Nov; *Bangkok Post* 10 Nov in FBIS-EAS 10 Nov} Thai authorities state that the Libyan expulsion threat had not been officially confirmed and that the workers had not been expelled; their contracts had expired. {*Bangkok Post* 12 Nov in FBIS-EAS 12 Nov; *Thailand Times* 12 Nov in FBIS-EAS 12 Nov} Deputy Foreign Minister Surin Phitsuwan later says he believes that Thailand's effort to settle the problem would satisfy the Libyan leader. {Radio Thailand 16 Nov in FBIS-EAS 16 Nov}

**8 November** The Croatian War Victims' Association announces that Croatian forces faced with imminent defeat in Vitez, in Bosnia-Herzegovina, are thinking of blowing up the Vitezit explosives and chemicals factory there, thus threatening "a real ecological disaster" throughout the region. {Croatian Radio 8 Nov in *BBC Summary of World Broadcasts* 10 Nov}

**8–11 November** In Sweden, at Riksgränsen, the National Defence Research Establishment (FOA) and the Defence Materiel Administration (FMV) jointly host an international workshop on *Doctrine and Instruments for Detection and Monitoring of Chemical Warfare Agents*. There are 20 presentations by specialists from 11 countries, as well as company exhibits of CW detection and related equipment. {*ASA Newsletter* 9 Dec}

**8–12 November** In Russia, OPCW Preparatory Commission Executive Secretary Ian Kenyon visits for detailed discussions with government and industry officials in Moscow and Volgograd. He is assured of Russian support for the early entry into force of the CWC. He is told of progress achieved by the Russian government in its preparation for destruction of chemical weapons, in particular the agreement in principle reached with local authorities within the Federation that now enable the construction of two chemdemil facilities. {PC-V/6}

**8–12 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Staff and Financial Regulations reconvenes and produces its fourth report on Staff Regulations and Rules {PC-V/A/WP.5}, as well as its fourth report on Financial Regulations and Rules {PC-V/A/WP.6}.

**8–12 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Data Systems reconvenes and produces its third report. {PC-V/B/WP.7}

**9 November** In the US House of Representatives, the Committee on Veterans' Affairs meets in special session with some 50 ailing veterans of the Gulf War [see 1 Nov]. These witnesses are suffering from unsatisfactorily diagnosed illnesses, and many of them complain of callousness or scepticism about their condition on the part of the Veterans Administration. Some say they are afraid that, if the Defense Department does not admit that CBW agents were used during the war, they will never receive proper treatment. {*Los Angeles Times* 10 Nov; *Boston Globe* 10 Nov}

Defense Secretary Les Aspin says at a news conference next day that he has ordered a panel of experts to search anew for reasons for the veterans' ailments. The panel, under the auspices of the Defense Science Board, is to be headed by Dr Joshua Lederberg of Rockefeller University. Secretary Aspin says there is no evidence that either the Iraqis or the allies used chemical weapons during the war. He says that, on 19 January 1991, the Czechoslovak unit [see 1 Nov] had twice detected low levels (0.05 mg/m<sup>3</sup>) of airborne sarin nerve-gas near Hafar Al Batin in northern Saudi Arabia, and that, on 24 January, the unit had been summoned to investigate what it determined to be a small patch of liquid mustard gas near King Khalid Military City. "If the [Czechoslovak] detections were valid, we don't know where the agent came from." Officials say that the Defense Department does not agree with the Czechs that allied bombing of Iraqi chemical-weapons sites could have been responsible, as the prevailing winds were blowing in the wrong direction. Secretary Aspin says that Washington would soon ask the Saudi Arabian government and other coalition members if they had kept any chemical stockpiles in the region. {DOD news release 10 Nov; AP in *International Herald Tribune* 11 Nov; *New York Times*, *Washington Post* and *Washington Times* 11 Nov; *Arms Control Today* Dec}

The possibility of the detected traces of agent having originated in "tests carried out by units of allied Saudi Arabia" is later expressed by Czech military sources. {*Mlada Fronta Dnes* 22 Nov in *East Europe Intelligence Report* 25 Nov}

**9 November** The US Secretary of State transmits to the Congress his determination and certification regarding government actions to terminate CW weapons proliferation activities of foreign persons, as required under 50 USC app.2410c(b)(2). They are referred to committee. {*Congressional Record* 9 Nov}

**10 November** US Undersecretary of State for International Security Affairs Lynn Davis testifies on the administration's nonproliferation policy [see 27 Sep] before the House Foreign Affairs Committee. She says: "To strengthen the Biological Weapons Convention, we are parting company with the previous administration and promoting new measures designed to increase transparency of activities and facilities that could have biological weapons applications, thereby increasing confidence in compliance with the convention." [See also 19 Oct]

**11 November** In Moscow, the visiting managing director of the German company Lurgi Umwelt-Beteiligungs gesellschaft [see 6 Sep 92], Norbert Tommek, announces that delivery of the DM 60 million [sic] chemdemil pilot plant to Saratov [see 26 Oct 92, 15 Feb and 22 Oct] would commence early in 1994, meaning that destruction operations for the former Soviet CW stockpile could commence by the end of that year, starting with the 700 tonnes of arsenicals for which the plant has been designed. {Reuter in *Frankfurter Rundschau* 12 Nov}

**11 November** The Netherlands informs the OPCW Preparatory Commission of the spectroscopic data on CWC-relevant chemicals which it is in the process of transmitting to the Provisional Technical Secretariat in response to the request made during the summer to all member states [see 19 Aug]. Among the chemicals are ten "military tear gases" (CN, CA, CS, CR, MD, ED, PD, DA, DC and DM) and ten "nerve agents". Among the latter are azidosarin, fluorotabun, dimethyl-GF and two V-agents, namely VX and its O-cyclopentyl NN-diethyl homologue. {PC-V/B/WP.10}

**12 November** In the UK, on Whale Island, Portsmouth, the Royal Navy opens its new Phoenix Nuclear, Biological, Chemical and Damage-Control School. {*ASA Newsletter* 10 Feb}

**12 November** President Clinton formally extends the national emergency declared in Executive Order 12735 [see 16 Nov 90] so that the measures it promulgated against the proliferation of chemical and biological weapons may remain in force [see 12 Nov 92]. In his letter of transmittal to Congressional leaders he writes: "As part of my new nonproliferation policy, I have decided that the United States will promote new measures that provide increased transparency of activities that could have biological weapons applications to help deter violations of the Convention" [see also 10 Nov]. {House Document 103-166; *Federal Register* 15 Nov}

**13 November** The Moscow newspaper *Nezavisimaya Gazeta* carries a long article on "Nonlethal Weapons" [see 2-3 Jun]. This observes that, if some of the weapons it describes had been available, the use of artillery to dislodge the extremists from the White House would probably have been unnecessary. The article reviews electronic, audio, laser, chemical and other technical possibilities, but notes that international agreements "are a serious obstacle to the development and application of chemical and biological weapons of nonlethal action". {*Nezavisimaya Gazeta* 13 Nov in JPRS-UMA 8 Dec}

In contrast, an earlier publication focussed solely on chemical weapons, by CBW specialist Nikolai Serafimovich Antonov, had stated that the Chemical Weapons Convention "does not prohibit the use of 'nonlethal' chemical weapons". However, the 'nonlethal' weapons with which General Antonov was principally concerned, dwelling upon their potential adverse environmental impacts, were antimateriel chemical weapons (such

as pro-knock agents for destroying internal-combustion engines), not antipersonnel ones. Even so, in regard to antipersonnel chemicals such as carfentanyl, General Antonov remarked that "the text of the convention does not give a clear answer as to whether the use of immobilizers as chemical weapons [see 12 Aug] is prohibited".

General Antonov recalled an accidental poisoning incident in the 1950s due to "use of a chemical agent for improving plasticity in synthetic film materials". "Olive oil for consumption was poured into packaging not entirely free of this peptizing agent, which, as it turned out, possessed the properties of an immobilizer. The oil was then delivered in the packaging to positions occupied by the Algerians during the armed conflict with France. The use of the delivered oil in their food rendered the Algerians incapable of moving, and their subdivision was captured so to speak bare-handed by the French, who were not expecting this effect." {*Mezhdunarodnaya Zhizn* Sep in JPRS-TAC 16 Dec}

**13 November** In Russia, what are now the Ministry of Defence Radiation, Chemical and Biological Defence Troops mark their 75th anniversary. Colonel General Stanislav Petrov, their chief, says on television: "The historical status of the troops has been restored. Originally, these troops were established and intended to perform defensive functions". {*Vesti* newscast 13 Nov in FBIS-SOV 23 Nov}

**13-17 November** In Iran, the Executive Secretary of the OPCW Preparatory Commission, Ian Kenyon, and staff are on an official visit during which he is received by Foreign Minister Velayati. {IRNA 14 Nov in FBIS-NES 15 Nov; Voice of the Islamic Republic of Iran 16 Nov in FBIS-NES 17 Nov} The itinerary includes visits to the Centre for the Treatment of CW Injured, in Tehran, and an agrochemical complex in the industrial city of Alborz, near Ghazvin [see 23 Aug]. {PC-V/6}

**14 November** In the UK, the pilot Foundation Course for the training of potential entrants to the OPCW begins. The course is being run in coöperation with the Netherlands and Switzerland, and is organized by the Royal Military College of Science, which is a faculty of Cranfield University. Its syllabus closely follows the one being developed for a Basic Foundation Training Course by the OPCW Preparatory Commission. Accepted for the course are 21 trainees from 15 countries: Algeria, Argentina, Bulgaria, China, Ghana, India, Malaysia, the Netherlands, Pakistan, Russia, South Korea, Switzerland, Ukraine, the UK and the USA. The course ends on 22 December.

**14-17 November** In Iran, a UN fact-finding mission of ten experts led by Dr John F Scott investigates reports of Iraqi CW attacks against Shi'ites in the southern marshlands [see 4 Nov]. In Tehran, the team receives a briefing from the supervisor of the Documentation Center for Human Rights in Iraq, al-Sayyid 'Abd-al-'Aziz al-Hakim, who hands over documents, including one said to contain Iraqi military orders for the use of chemical weapons [see also 22 Oct]. {Voice of Iraqi Islamic Revolution 17 Nov in FBIS-NES 19 Nov} The team travels to the Iraq/Iran border area of Khuzestan province where more than 5000 Iraqi Shi'ites have reportedly sought refuge. {AFP in *Daily Telegraph* 15 Nov; *Guardian* (London) 15 Nov; IRNA 14 Nov in FBIS-NES 15 Nov} In Ahvaz, the team is given a document by four Iraqi refugees detailing the areas and times of the alleged chemical attacks, which they say they had witnessed from close quarters. {IRNA 18 Nov in FBIS-NES 19 Nov}

Later the team, in the executive summary of its report, writes the following about the 11 people it had interviewed in Tehran and Ahvaz: "Most of the persons interviewed by the team appeared to have been coached and rehearsed in the stories that they presented to the team. There were a number of inconsistencies evident in accounts, particularly with regard to the descriptions of the effects of the alleged attack..." The report goes on to say that "more consistent information" was obtained about the alleged site of the incident, and the fact that subsequently there was no difficulty in locating the site "gave some credibility to the information provided in Iran".

**15 November** In Hanoi, a four-day conference begins on the long-term effects of herbicides, the second such international symposium. There are more than 200 participants from inside and outside Vietnam, and 71 papers are to be presented. {AP in *Washington Times* 26 Nov} During the previous week, Vietnamese doctors had stated at a news conference in Hanoi that the defoliant Agent Orange sprayed by US forces in South Vietnam 20 years previously was still causing cancers, deformed babies and skin defects. Professor Hoang Dinh Cau, chairman of the national committee monitoring after-effects of herbicides had said that "almost all the population of South Vietnam are more or less damaged". {Reuter in *Current News* 10 Nov} [See also 2 Nov]

**15–19 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Safety and Health reconvenes [see 10 May] and produces its second report. {PC-V/B/WP.11}

**15–19 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Challenge Inspections reconvenes [see 23–27 Aug] and produces its first interim report. {PC-V/B/WP.12}

**15–30 November** In New York, Iraqi and UNSCOM delegations meet for a further round of technical talks [see 8 Oct] and sign a joint report. {Iraq Radio 13 Nov in FBIS-NES 15 Nov; AFP 15 Nov in FBIS-NES-93 15 Nov; INA 1 Dec in *BBC Summary of World Broadcasts* 3 Dec}

**16 November** Czech Defence Minister Antonin Baudys leaves for Washington with a team of CW specialists and chemical detection equipment of the kind used by the Czechoslovak unit during the Gulf war [see 9 Nov]. There is talk of sales of the equipment. {*Defense News* 15 Nov}

**16 November** Meeting in The Hague, representatives of the 17 countries members of the Coordinating Committee for Multilateral Export Controls (COCOM) decide to dissolve the committee as soon as possible. COCOM — a construct of the Cold War — will be replaced by a new multilateral agreement, albeit one whose aims, parties and targets have yet to be determined. {*Atlantic News* 19 Nov} Three working parties have been created to prepare for a further meeting in The Hague in January at which the new structure will be defined. {*Intelligence Newsletter & Mednews* 25 Nov}

**16 November** UK Defence Secretary Malcolm Rifkind, during a lecture delivered in London on the future role of nuclear weapons in British defence strategy, speaks as follows: "Would...the possible use of chemical or biological weapons against us be seen as justifying the threat of our using nuclear

weapons [see also 19 Oct]? Would there be a difference between the use of such weapons against centres of population in the United Kingdom and their use against British forces deployed overseas?"

He continues: "We have of course given, in common with the other nuclear weapons states, a negative security assurance which precludes our using, or threatening to use, nuclear weapons against any state which is a party to the NPT or similar internationally binding non-proliferation commitments and which is not itself a nuclear weapons state or in alliance with one. These assurances were given in the context of the Cold War, when there was no appreciable risk of our facing a chemical or biological attack from any country outside the Warsaw Pact. They remain in force today... But the context in which we extend these assurances is one in which we attach ever increasing importance to the Biological and Chemical Weapons Conventions: both to securing universal adherence to these Conventions and to ensuring that they are effectively implemented, with appropriate international action directed against countries which do not abide by their provisions."

**16 November** In the US Congress, the Senate Veterans' Affairs Committee conducts a hearing on "Persian Gulf War Illnesses: Are We Treating Veterans Right?". Among those testifying is Marine Corps Chief Warrant Officer Joseph Cottrell, who had served with an NBC team during the Gulf War. He states that low levels of chemical agents were detected several times on battlefields during the war [see also 9 Nov]; his own *Fox* detection vehicle had twice picked up traces of lewisite vapour. {AP in *Boston Globe* 17 Nov; *Independent* 18 Nov} But Defense Under Secretary John Deutch later dismisses these detections as false positives. {*Washington Times* 18 Nov}

The Committee also hears testimony from Major-General Ronald Blanck, commander of the Walter Reed Army Medical Center, in which he says that several possible causes of the mystery symptoms in Gulf-War veterans had been closely examined and ruled out, at least for now. They were: smoke from oil fires; leishmaniasis; exposure to petroleum products; depleted uranium; and chemical warfare agents. {*New York Times* 23 Nov}

And the House Veterans' Affairs Subcommittee on Oversight and Investigations conducts a hearing on "Health Care Problems and Concerns of Persian Gulf War Veterans". It receives testimony from veterans, from veterans' organizations, from the Office of Technology Assessment and from administration officials.

**16–17 November** Los Alamos National Laboratory and the American Defense Preparedness Association co-sponsor a conference on Non-Lethal Defense at a Johns Hopkins University facility in Laurel, Maryland. Secret-level clearances are required of the US-only participants. An official from the Office of the Deputy Assistant Secretary of Defense for Peacekeeping reportedly tells the conference that Pentagon analysts have "just started" a series of studies on non-lethal technologies and will make their first progress report in February or March. {*Aerospace Daily* 17 Nov} A Justice Department official speaks of efforts to establish a "synergistic relationship" with the Defense Department in the field. {*National Defense* Jan} The Army plans to appoint a senior advisory group in March to guide development of "low-collateral, less-than-lethal weapons". Several projects are already under way, notably at Edgewood RDE Center. One project there to which publicity has been given is a police-like baton that can shoot drug-filled disabling darts to a

range of 30 yards. {*Defense Week* 22 Nov} There is also talk of “drugs that would make enemy soldiers fall asleep [which] could be dusted over the enemy from the air, or a fog-like vapour wafted towards enemy lines”. {*New Scientist* 11 Dec} And there is talk of “calmative agents” delivered in dimethyl-sulphoxide solution for percutaneous absorption. {*National Defense* Dec} [See also 13 Nov]

**16–19 November** The US Army Edgewood Research, Development and Engineering Center hosts the 1993 international Scientific Conference on Chemical Defense Research. Nearly 200 papers and posters are presented. Especially striking is the work displayed on the application of developments in biotechnology to protection against CBW agents. As for possible new threat agents, interest is still evident in synthetic opioids of the fentanyl family [see 12 Aug], in the propensity of the trifluoromethyl group for enhancing biological potency, and in such fluorocarbons as perfluoroisobutene and perfluorocyclobutane. {Conference abstract book}

**18 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Programme of Work and Budget finally achieves consensus and concludes its extended session [see 5 Nov], producing its final report. {PC-V/A/WP.3} Annexed to the report is its recommended programme of work and budget for 1994. These recommendations assume that 65 states, including Russia and the USA, will have deposited their instruments of ratification by 18 July 1994, the date allowing the Convention to enter into force at the earliest possible time, namely 13 January 1995.

**18 November** The US Navy test-fires from a submarine off the coast of Florida a Trident ballistic missile fitted with a novel non-nuclear earth-penetrating warhead designed to destroy deeply buried command centres or chemical-weapons storage sites. {*Defense News* 13 Dec}

**19 November** The UN General Assembly First Committee ends its month-long session. It does not act on a draft resolution introduced by The Netherlands encouraging states to sign and ratify the CWC. Although co-sponsored by a hundred states, consensus could not be achieved on an amendment proposed by Iran stating that “upon the entry into force of the Convention, States Parties shall not maintain among themselves any restrictions, including those in any international agreements, incompatible with the obligations undertaken under the Convention” [see also 3 Sep]. The Netherlands argued that this language did not conform, as Iran had argued it did, with Article XI of the CWC, and announced a list of 36 mostly Northern co-sponsors who would withdraw were the draft to be amended.

The First Committee had, however, succeeded in adopting without vote a resolution on the Biological Weapons Convention. This commended the work of VEREX [see 24 Sep and 10 Nov] and asked the Secretary-General “to render the necessary assistance...should the Depositary Powers be requested by a majority of States Parties to convene a conference” to examine the VEREX report — i.e., to consider developing a BWC verification regime. {*Disarmament Times* 22 Nov; *Arms Control Reporter* 704.B.560} The BWC now has 133 states parties.

**20–21 November** In Iraq, a team of nine experts led by Roger Hill of Australia, UNSCOM 65, conducts an inspection of the site of an alleged CW attack in the southern marshlands north-

west of Basrah. The team is constituted from the fact-finding mission which had been in Iran during the previous week in order to locate the alleged site [see 14–17 Nov]. In its preliminary release on the inquiry, UNSCOM says that, although the team did not find any immediate evidence of CW, it took a large number of soil, water, flora and fauna samples, and the analysis of these samples may take some months to complete, until which time UNSCOM “will not...be in a position to arrive at a definitive conclusion on the question of whether chemical weapons were used or not”. The release says, further, that “the Commission has also obtained some documents, the authenticity and relevance of which is now subject to investigation”. {UNSCOM press release 22 Nov}

Later, in the executive summary of its report, the team says: “On arrival [at the alleged site], it was possible to determine that no military engagement of the size and scope reported to the Commission had taken place. Indeed it was also possible to discredit the reports of a number of eyewitnesses who could not have observed activity at the site due to distance, concealment by vegetation, and location... There were no signs of any attempts by Iraq to sanitize the area prior to the team’s arrival. Such attempts would have been obvious given the environment at the site... There were no immediate signs of a chemical attack, and pending the results of scientific analysis of the samples taken from the area, and forensic investigations of the notebook, there is no evidence to support the allegations.”

**22 November** Iraqi Deputy Prime Minister Tariq Aziz is at the UN for high-level talks immediately prior to the regular review by the UN Security Council of the UN sanctions against Iraq [see also 15–30 Nov]. {Iraq Radio 13 Nov in FBIS-NES 15 Nov; AFP 15 Nov in FBIS-NES 15 Nov; *Boston Globe* 23 Nov}

**22 November** In Washington, John Holum is finally sworn in as the new director of the US Arms Control and Disarmament Agency. {*Defense News* 21 Feb}

**22–24 November** In Moscow, the Russian Academy of Sciences sponsors a major international conference on proliferation and missile defence. {*Defense News* 13 Dec}

**22–26 November** In The Hague, the OPCW Preparatory Commission Group of Experts on Chemical Weapons Storage Facilities produces its first interim report. {PC-V/B/WP.13}

**22–26 November** In The Hague, a new Group of Experts under the OPCW Preparatory Commission convenes to work on Old and Abandoned Chemical Weapons, producing a first report. {PC-V/B/WP.14}

**23 November** The North Korean Foreign Ministry revives the allegations of US germ warfare during the Korean War in the following terms: “Such a crime committed by the United States was already proved through the testimonies of US airmen who were taken prisoner while participating in the poison gas and bacteriological warfare in the Korean war. It was also made clear by an international lawyers investigation group, a fact-finding group of the Women’s International Democratic Federation and a scientists’ fact-finding group on the use of germ weapons.” {KCNA 23 Nov in FBIS-EAS 23 Nov} A member of the WIDF fact-finding group, Dr Candelaria Rodriguez of Cuba, is later interviewed by the North Korean news agency, which quotes her as follows: “Saying that she saw US-made germ bombs in burned cities, villages, streets and forests of Korea,

she noted that flies, mosquitoes, spiders, bedbugs, beetles and crickets contained in them were mediators of pest, cholera, typhoid and other horrible contagious virus. The US troops committed the unpardonable crimes of dropping food containing germs on residential quarters and spraying smallpox germ, leaving their temporarily occupied areas, she pointed out.... The United States left no stone unturned to threaten and bribe her, a witness, in a bid to conceal the truth of these crimes.” {KCNA 1 Dec in FBIS-EAS 1 Dec}

**23 November** The United Nations publishes the second report on human rights in Iraq by the special rapporteur, Ambassador Max van der Stoep, appointed by the UN Commission for Human Rights [see 20 Aug]. The report, which is an interim one for the UN General Assembly, states that Iraqi government forces have maintained a continuous bombardment since June of villages in the southern marshlands, which are being systematically drained. The rapporteur found no evidence that the rivers and waterways of the marshes had been deliberately poisoned [see 6 May], but he did find evidence of tremendous pollution by effluent from chemical plants and untreated sewage. He calls for the deployment of monitors in Iraq. {*Independent* (London) 23 Nov; *New York Times* 24 Nov}

**23 November** The US Army Chemical Materiel Destruction Agency submits to the Congress the final survey and analysis report on non-stockpile chemical materiel (NSCM) called for in the 1993 Defense Authorization Act [see 1 Oct 92]. The report indicates that the remains of chemical weapons, some dating back to World War I, may exist at 215 sites in 33 states, the District of Columbia and the US Virgin Islands, a somewhat larger number than the interim report had suggested [see 20 Apr]. The sites are mostly places where chemical munitions have either been disposed of by land burial or where it is judged possible that they might have been so buried. Clearance is estimated, very roughly, to cost \$17.7 billion in current-year dollars over the next 40 years. {AP in *New York Times* 26 Nov}

**23 November** President Clinton transmits the Chemical Weapons Convention to the United States Senate for its advice and consent to ratification, urging that this be given “as soon as possible in 1994”. His letter of transmittal presents the main provisions of the Convention and informs the Senate of ancillary documents it will shortly be receiving. These are: (a) the recommended legislation needed to implement the treaty in the United States; (b) an analysis of the verifiability of the treaty, in accordance with Section 37 of the Arms Control and Disarmament Act as amended; and (c) the results of the executive-branch review of the “impact of the Convention’s prohibition on the use of riot control agents as a method of warfare on Executive Order No 11850, which specifies the current policy of the United States with regard to the use of riot control agents in war”. {*US Department of State Dispatch* 6 Dec}

Not yet transmitted to the Congress is the 1990 Bilateral Destruction Agreement [see 23 Jun].

Next day, the White House announces arrangements for the National Authority required under Article VII of the Convention: “In the United States, this body will consist of all government agencies who have activities affected by CWC implementation or who have oversight of civilian activities that are affected. The National Security Council Staff will chair the National Authority and the US Arms Control and Disarmament Agency will serve as the Office of the US National Authority, responsible for compiling declarations and reports, liaison with

the OPCW, and administrative support for US implementation activities.” {White House fact sheet 24 Nov}

**24 November** In Angola, the Air Force has been dropping chemical bombs on civilian targets in the area of Cafunfo in Lunda Norte province [see also 10 Aug], according to Voice of the Resistance of the Black Cockerel. {25 Nov in *Africa Intelligence Report* 30 Nov}

**26 November** Iraq formally accepts long-term UN monitoring of its weapons programmes, as required under the Gulf War ceasefire resolution [see 15–30 Nov]. The letter from Foreign Minister Mohammed Said al-Sahar to the President of the UN Security Council informing the UN of the Iraqi decision to accept the obligations of Resolution 715 (1991) suggests that this and other “positive developments” justified the lifting of sanctions [see 22 Nov]. The Security Council has stated that it will not agree to any such thing until it is satisfied that Iraq has given a full accounting of its nuclear, CBW and missile programmes and has demonstrated its cooperation with the ongoing monitoring and verification. {*New York Times*, *Washington Post* and *Financial Times* 27 Nov}

**26 November** The Executive Secretary of the OPCW Preparatory Commission issues a list of the clerical errors requiring correction in each official version of the CWC [see 15 Jun] as compared with the text in CD/1170 of 26 August 1992, which was the text finally adopted by the CD Ad Hoc Committee on Chemical Weapons. For the Arabic version, four errors are listed; for the Chinese, six (four being attributed to “poor printing”); for the English, seven; for the French, eleven; for the Russian, 19; and for the Spanish, 23. {PC-V/5} Yet more errors are announced two weeks later: one in the French version and 28 in the Chinese. Corrections of the latter have been proposed by the Chinese delegation, with the explanation that “certain phrases in the Chinese version of the Convention may cause ambiguity, misunderstanding or grammatical confusion”. {PC-V/5/Add.1}

**26 November** For destroying the US CW stockpile [see 13 Sep and 4 Oct], costs are currently estimated at \$8-9 billion, according to unidentified US officials quoted in the press. The chemdemil operations will take 10-15 years to complete. {*Reuters* in *Washington Post* 26 Nov}

**27 November** In Bosnia-Herzegovina, chemical shells are reportedly being used in attacks on Serb positions in the region of Zvornik. This report, by Tanjug news agency from Belgrade {Tanjug 1 Dec in *BBC Summary of World Broadcasts* 3 Dec}, succeeds several earlier ones also alleging Bosnian CW attacks in various parts of the region {Tanjug 21 Nov in *FBIS-EEU* 22 Nov; Tanjug 30 Nov in *BBC Summary of World Broadcasts* 2 Dec} [see also 21 Oct] and will be followed by several more over the next three weeks. {Tanjug 30 Nov in *BBC Summary of World Broadcasts* 2 Dec; Tanjug 9 Dec; Tanjug 17 Dec in *BBC Summary of World Broadcasts* 20 Dec} The commander of the Bosnian Serb army, General Ratko Mladic, states in an open letter to the commander of UNPROFOR in Bosnia-Herzegovina, General Francis Briquemont, that poison-gas artillery shells and rockets are being manufactured in Hak chemical plant in the UN-protected city of Tuzla. He calls upon General Briquemont “to dismantle the facilities and destroy the already manufactured quantities”, otherwise his troops would

take “corresponding measures”. {Tanjung 1 Dec in *BBC Summary of World Broadcasts* 3 Dec}

**27 November** The UN Security Council decides against any immediate lifting of the sanctions on Iraq [see 26 Nov]. Iraqi Deputy Prime Minister Tariq Aziz describes the decision as “a double cross”. {AP in *Boston Globe* 28 Nov} He will remain in New York in order to prepare a joint public statement with UN-SCOM Executive Chairman Rolf Ekéus setting out what Iraq must still do to be in full compliance with its obligations under the relevant UN resolutions. {*New York Times* 28 Nov}

President Clinton tells the US Congress that he strongly endorses the action of Ambassador Ekéus in telling Iraq that, before he can report favourably to the Security Council, Iraq “must establish a clear track record of compliance” with the long-term monitoring regime under SCR 715. {*US Department of State Dispatch* 6 Dec} This may take “many months”, US and British officials are quoted as saying. {*Times* (London) 29 Nov} Ambassador Ekéus, speaking later at the Washington Institute for Near East Policy, observes that the monitoring will, on current plans, involve some 100 “critical” Iraqi sites and more than a thousand industrial establishments. {*Washington Times* 3 Dec}

**28 November** From Tokyo the imminent publication is announced of a study of the biological-warfare plans of the Japanese Imperial Army during World War II [see also 20 Aug]. The study, based on newly discovered Army records, records BW operations being projected for March 1942 in the Bataan peninsula of the Philippines, estimated to require 10 tons of microbial bombs. BW operations were subsequently envisaged against Australia, India, Burma, Hawaii and other Pacific islands. The planning, finally abandoned in July 1945, had been an Army initiative, and it had been thought that the concurrence of Emperor Hirohito might not have been forthcoming. The principal author of the study is Professor Yoshiaki Yoshimi of Chuo University. {Kyodo 28 Nov via *Military News*; AFP in *Daily Telegraph* (London) 29 Nov}

**28 November** In Bosnia-Herzegovina, six casualties are admitted to the Franciscan Hospital in Nova Bila, injured in Vitez by a bursting shell. All six — five children and a woman — have difficulties in breathing, cough and eye irritation; the diagnosis is “poisoning with suffocating irritants”, and “chloride poisoning” is mentioned. This information is contained in a subsequently released report from the Office of the Vice Prime Minister of the ‘Croatian Republic of Herceg-Bosna’, a report which also states that medical staff of the British UNPROFOR battalion in Vitez had visited the hospital, where “they were shown medical documentation with relevant facts concerning the injuries inflicted by poisonous gas, and have talked to medical staff about the same”.

**29 November** In the UK, the Ministry of Defence responds to a parliamentary question asking how many current or former servicemen have complained of ‘Gulf War syndrome’ [see 16 Nov] since August. The Ministry states that 5 former members of the armed forces had been in touch during the period, but no currently serving personnel. {*Hansard (Commons)* written answers 29 Nov}

**29 November–3 December** In The Hague, the OPCW Preparatory Commission Group of Experts on Technical Co-operation and Assistance produces a second interim report. {PC-V/B/WP.16}

**29 November–3 December** In The Hague, the OPCW Preparatory Commission Group of Experts on Chemical Weapons Destruction Facilities produces an interim report. {PC-V/B/WP.17}

**29 November–3 December** In The Hague, the Expert Group on Training under the OPCW Preparatory Commission reconvenes [see 9-13 Aug] informally for presentations of offers of training by member states, and to consider a number of other matters. Ten member states are represented — Austria, France, India, Iran, Japan, the Netherlands, Romania, Switzerland, the UK and the USA — as are the OPCW Foundation, the Netherlands Organisation for Applied Scientific Research (TNO) and the PTS. The Group issues a report. This includes a summary of the training offers made thus far — by the Netherlands, the UK and France — and it also notes that offers are expected from India, Russia, the USA and possibly Austria as well. The report includes discussion of the 1994 training milestones. {PC-V/B/WP.18}

**29 November–3 December** From the United States, a high-level team visits the Czech Republic, the United Kingdom and France to continue inquiries into the possibility that exposure to CBW agents may indeed have been responsible for the undiagnosed illnesses of Gulf War veterans [see 29 Nov]. About a dozen of the 207 soldiers that had served with the Czechoslovak CW defence unit in the Gulf have reported afflictions similar to those of the US veterans. The team is led by Senator Richard Shelby, and includes Assistant Defense Secretary Edwin Dorn and the commander of Walter Reed Army Medical Center, Maj-Gen Ronald Blanck. In Prague, the team tells reporters that it accepted that the Czechoslovak unit had detected traces of nerve and mustard gas in Saudi Arabia on five occasions during 19-24 January. The team also tells reporters that the United States will be purchasing CW detection equipment from the Czech Republic [see 16 Nov]. In Paris the team is told that two French CW detection alarms had sounded during 24-25 January 1991 in Saudi Arabia 15 miles south of King Khalid Military City, at a time when the wind-direction was towards Iraq; asked to verify the detection, the Czechoslovak unit did so, confirming the presence of a nerve agent and mustard gas [see also 22 Jan 91]. {UPI 25 Nov in *Military News* 3 Dec; CTK 30 Nov in *BBC Summary of World Broadcasts* 3 Dec; Inter Press Service 1 Dec in *Military News*; *Washington Times* 2 Dec; AP 4 Dec in *Washington Post* 5 Dec; *Defense News* 6 Dec}

**30 November** In the United States, at White Sands Missile Range, New Mexico, a simulated CW missile warhead is successfully intercepted by a hit-to-kill ERINT missile fired from a *Patriot* launcher. The target had carried 38 water-filled canisters to simulate a warhead of the submunition type. According to the Army Space and Strategic Defense Command, “the experiment validated the effectiveness of hit-to-kill in destroying these challenging targets”. {*BMD Monitor* 3 Dec; *Aviation Week & Space Technology* 6 and 13 Dec; *Aerospace Daily* 24 Jan}

**30 November** In the United States, President Clinton signs into law the National Defense Authorization Act for Fiscal Year 1994. This cuts the proposed Defense Department counterproliferation programmes [see 30 Mar] from some \$45 million to about \$6 million. {*Defense Daily* 8 Dec} It allocates \$379.6 million to the chemdemil programme [see 26 Nov], \$54

million less than the administration had originally requested. {*Arms Control Reporter* 704.E-1.28}

Also required by the legislation is a fundamental change in future programming and budgeting for CBW defence. Instead of the present, largely independent, CB defence programmes of the different Military Departments, the Defense Department is to coordinate and integrate the programmes through the Deputy Assistant for Chemical/Biological Matters, with the Secretary of Defense exercising oversight through the Defense Acquisition Board process. Funding for CB defence is to be through a separate Defense Department account, not through the Military Department budgets. The Secretary of the Army is designated as executive agent for reviewing all CB defence funding requirements, and all CB defence training is to be consolidated at the Army Chemical School. The Secretary of Defense is to report to Congress by 1 May 1994 on how the new administrative arrangements are proceeding. {*ASA Newsletter* 10 Feb}

**December** The Croatian military journal *Hrvatski Vojnik* reports on the use by Serbian forces of 128mm calibre multiple-launch rockets uploaded with irritant agent CS.

**1 December** In Bosnia-Herzegovina, Croatian forces near Vares have come under poison-gas artillery attack by Muslim forces, according to the commander of the Bosnian Serb army, General Mladic, in a broadcast interview. {*Tanjug* 1 Dec in *BBC Summary of World Broadcasts* 3 Dec} The day previously the HVO 111th Brigade in Zepce had reported that chlorine-filled missiles were being fired on villages just to the north {*Radio Croatia* 30 Nov in *JPRS-TAC* 16 Dec}, and *Radio Croatia* had broadcast a report of Muslim poison-gas shells falling on the villages of Pazaric, Fojnica and Lijesnica, to the south {*Radio Croatia* 30 Nov in *BBC Summary of World Broadcasts* 1 Dec}. Those reports had themselves succeeded other similar ones from the same two areas in mid-November [see also 14 Sep]. {*Radio Croatia* 13 Nov in *BBC Summary of World Broadcasts* 15 Nov; *Radio Croatia* 16 Nov in *BBC Summary of World Broadcasts* 18 Nov}

**1 December** OPCW Preparatory Commission member states are requested by the Executive Secretary to submit recommendations or information on possible offers regarding the items of major inspection equipment identified as necessary for the OPCW by the Experts' Group on Equipment. {PC-V/B/5}

**1-3 December** In the United Kingdom, a second "practice compliance inspection" of a biological facility [see 4 Jun] is conducted by a team from Canada, the Netherlands and the UK, with a US observer, at a large pharmaceutical manufacturing site of undisclosed location. The trial has been aimed at the problem of determining compliance or noncompliance with the Biological Weapons Convention, while at the same time, as a Canadian commentary puts it, "taking into account the reality (as opposed to the anxiety) of concerns associated with the potential loss of commercial proprietary information". {*Disarmament Bulletin* Winter}

**1-4 December** In The Hague, a group of 21 jurists, law professors and legally trained diplomats, government officials and parliamentarians from Argentina, Australia, Bangladesh, Cameroon, Costa Rica, Ethiopia, France, Germany, India, Iran, Israel, Italy, Japan, Kenya, Poland, Russia, Sweden, the USA and the OPCW Provisional Technical Secretariat meets in con-

ference under the auspices of the PTS to consider the draft *Manual of National Implementing Measures for the Chemical Weapons Convention* prepared by a team in Chicago, USA, headed by Professor Barry Kellman of the DePaul University College of Law. Proposals for revision are put forward.

**2 December** *Nature*, the international scientific journal, publishes strong criticism of its review of the US National Institute of Medicine study on the long-term health effects in military volunteers of experimental exposure to mustard gas and lewisite during World War II [see 6 Jan]. The review, by the Director-General of the UK Chemical and Biological Defence Establishment, Dr Graham Pearson, had among other things suggested that follow-up inquiries among volunteers exposed to toxic agents raised "alarm and anxiety" unreasonably.

**2 December** In Washington, Congressman Glen Browder makes public the medal citation of a US soldier who had served with a CBW detection unit during the Gulf war: he had detected mustard gas on the uniform of a soldier who had become blistered after checking an abandoned Iraqi bunker just after the war ended. {*Sun* (Baltimore) 3 Dec}

**2-3 December** In Washington, the Henry L Stimson Center organizes a round-table discussion on the CWC with senior managers of the US chemical industry, the OPCW Provisional Technical Secretariat also participating. {*OPCW Synthesis* 12 Jan} A publication from the meeting, *Implementing the Chemical Weapons Convention: Counsel from Industry*, is later presented in The Hague.

**6 December** In Bosnia-Herzegovina, Serb forces reportedly fire poison gas [see also 25 Aug] in *Maljutka* rockets during their continuing offensive at Teocak near Tuzla. {*Radio Bosnia-Herzegovina* 6 Dec in *BBC Summary of World Broadcasts* 8 Dec} In a letter to the UN Security Council, Bosnian Prime Minister Haris Silajdzic accuses Bosnian Serbs of using chemical weapons. {*AFP* in *Independent* (London) 7 Dec}

**6-9 December** The Australia Group [see 7-10 Jun] meets in Paris, the 25 member countries and the European Commission participating. The press release which it has latterly become the Group's practice to issue after each meeting says: "There was considerable work on harmonising current licensing procedures. In particular, the Group considered streamlining licensing procedures, with a view to facilitating legitimate trade without increasing the risk of contributing to potential weapons production." The Group received the report of the Asian Export Control Seminar which the Japanese government had hosted in Tokyo some six weeks previously; and it appreciated the offer of Argentina to host a Latin American regional Chemical and Biological Export Controls meeting in Buenos Aires in June 1994. The press release continues: "The Group expressed the hope that the broadly based international dialogue which these seminars represent will promote understanding of the specific, practical measures which can be taken to prevent inadvertent association with CBW programs, and that it will foster a cooperative approach to smooth implementation of such steps." The press release had earlier claimed that the "work of the Australia Group in developing and harmonising effective national export controls provides a key support for the disarmament objectives" of the Chemical and Biological Weapons Conventions. {*Doc AG/Dec93/Press/Chair/12*}

**7 December** In Belgium, the Foreign Minister expects that the CWC will be submitted for ratification during Spring 1994, so the response to a parliamentary question in the Senate indicates. The treaty is to be submitted not only in the Federal parliament, but also in the Flemish and Walloon regional parliaments. The Ministry for Foreign Affairs is to be responsible for coordinating all matters relating to the Article VII National Authority in Belgium.

**7 December** US Defense Secretary Les Aspin, addressing the National Academy of Sciences in Washington, outlines a new US approach to the nonproliferation of weapons of mass destruction. This five-point plan, the "Defense Counterproliferation Initiative", reportedly follows from policy guidance contained in Presidential Decision Directive 13 [see 10 Sep] ordering the Defense Department to focus on the proliferation threat and strengthen the military's ability to deal with nuclear, biological and chemical weapons. {*Los Angeles Times* and *Washington Post* 8 Dec; *Arms Control Today* Jan/Feb} The new policy reflects the assessment that, despite past and continuing efforts on the diplomatic and export-control fronts, proliferation of these weapons may not be stoppable, and must be defended against as well, even attacked. {*Defense Daily* and *New York Times* 8 Dec}

Secretary Aspin says that the first element of the plan is its recognition of the new mission which President Clinton, in his address to the UN General Assembly [see 27 Sep], had stated in the following terms: "One of our most urgent priorities must be attacking the proliferation of weapons of mass destruction, whether they are nuclear, chemical, or biological; and the ballistic missiles that can rain them down on populations hundreds of miles away... If we do not stem the proliferation of the world's deadliest weapons, no democracy can feel secure." The other four points of the plan are: (a) tailoring new US weapons to destroy weapons of mass destruction, even if this requires that the ABM Treaty be re-interpreted; (b) re-examining the strategies used against the new kind of threat, re-writing the war plans accordingly; (c) focussing intelligence efforts on detecting weapons of mass destruction; and (d) seeking international cooperation in curtailing the new threat. {US Information Service (London Embassy) *Official Text* 9 Dec}

Technological inputs to the counterproliferation initiative are described at a briefing given by the Non-Proliferation Center at the CIA. They include such things as unmanned vehicles equipped with sensors for sniffing out chemical weapons, and "boosted earth-penetrating weapons" [see 18 Nov]. {*Washington Post* 8 Dec}

An unidentified "senior defense official" is quoted as saying that US forces had not been prepared to deal with biological weapons in Iraq during the Gulf war — "both to defend ourselves and to know how to attack bulk biological agent or weaponized biological agent". {*Washington Times* 8 Dec}

**7 December** US Special Operations Command lists equipment items it projects it will need for "greater soldier survivability" in the 21st century, including "nonlethal weapons for dealing with crowds [and] for disabling military personnel and equipment" [see also 16-17 Nov]. This is during a presentation by the SOCOM Director of Operations, Major-General Lloyd Newton USAF, at the *Defense Week* conference, Soldier Survivability: A Force Multiplier. {*Inside the Army* 13 Dec}

**7-8 December** In Warsaw, a seminar on *National Authority and National Implementation Measures for the CWC* is at-

tended by representatives of member-states of the Eastern European Group of CWC signatories, as well as guest speakers from other countries, from international organizations and from research institutes, including the Harvard Sussex Program and SIPRI. The seminar is a Polish initiative, organized by the Ministry of Foreign Affairs in cooperation with the OPCW Provisional Technical Secretariat and with the support of the Polish Chamber of Chemical Industry and CIECH Ltd. It is held at the headquarters of CIECH, and opened by Dr Robert Mroziewicz, Deputy Foreign Minister of Poland. There are some 50 participants in all. The signatory states represented are Albania, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Germany, Hungary, Latvia, Netherlands, Poland, Romania, Russian Federation, Slovakia, Sweden, Ukraine and the USA. The Hungarian delegation demonstrates an integrated information management software system, IDOM CDS, for assisting national authorities in implementing the Convention. {PC-V/A/WP.9}

The Croatian delegation distributes a paper entitled "Production of Chemical Weapons at the Military Technical Institute Mostar plant by the former Yugoslav National Army". This is a translation of an article in the current issue of *Hrvatski Vojnik*.

**8 December** The Moscow weekly *Rossiya* publishes what had originally been a memorandum for the Russian Federation Supreme Soviet by Dr Lev Fedorov in which he amplifies archive-derived information he had published previously [see 10 Aug] about production of CW weapons in the USSR. During 1940-45, a total of 77,385 tonnes of mustard gas, 20,601 tonnes of lewisite, 11,104 tonnes of hydrogen cyanide, 8293 tonnes of phosgene and 6058 tonnes of adamsite had been produced. The article relates much detail about working conditions at some of the factories involved. The CW-agent stockpile identified for destruction in 1992 comprised 690 tonnes of mustard gas, 6585 tonnes of lewisite, 1010 tonnes of mustard/lewisite mixture, no hydrogen cyanide, 5 tonnes of phosgene, 3200 tonnes of adamsite, 11,720 tonnes of R-35 (sarin nerve gas, produced in Stalingrad from 1959), 4750 tonnes of R-55 (soman, produced in Volgograd until the end of the 1960s) and 15,200 tonnes of R-33 (V-gas, produced over 15 years in Novocheboksarsk, at the Chuvash Production Association Khimprom imeni Leninskiy Komsomol). As to the *Foliant* research and development programme that began in 1973 and the novel 'Novichok' CW agents it yielded [see 8 Dec 92 and 31 Jan], Dr Fedorov gives no technical details, though he does refer to a binary Novichok as 'Product A-232' (attributing the designation to "the British press"). Prizes and awards made to 32 prominent figures in the overall CW-weapons programme are described. {*Rossiya* 8-14 Dec in JPRS-TAC 18 Jan}

**8 December** The Netherlands Foreign Minister, Dr P H Kooijmans, and the Executive Secretary of the OPCW Preparatory Commission, Ian Kenyon, sign the headquarters agreement between the Commission and its host state. {OPCW/PTS press release 8 Dec}

**8 December** OPCW Preparatory Commission member states are requested to inform the Executive Secretary if they wish to take part in an inter-laboratory comparison test for the analysis of CWC-relevant chemicals. The PTS is sponsoring this new round robin [see 18-21 May] on the recommendation of the Analytical Chemists Combined Group of Experts. The purpose of the test is to enable laboratories to assess their performance

against that of others, and also to further the development of standard analytical procedures. {PC-V/B/8}

**8–9 December** In Brussels, NATO defence ministers meet in ministerial sessions of the NATO Defence Planning Committee and the Nuclear Planning Group, focussing on the 'Partnership for Peace', Combined Joint Task Forces and counterproliferation concepts. On the last of these, NATO has been considering a US proposal reflecting the Defense Counterproliferation Initiative [see 20-21 Oct and 7 Dec]. {*Jane's Defence Weekly* 18 Dec} In the final communiqué, the defence ministers say: "We expressed our concern at the growing risks to Alliance security interests posed by the proliferation of weapons of mass destruction, their delivery means and related technologies. Intensified efforts are essential to prevent such proliferation and to redress and counter if necessary the associated risks to Alliance security". {*Atlantic News* 10 Dec}

**9 December** In New York, at the Polish Scientific Institute, a lecture on 'Polish Microbiological Society and Germ Warfare Propaganda in the Korean War [see 23 Nov]' is delivered by Dr Maria Rolicka.

**13 December** The leader of the US delegation participating in the BWC Group of Governmental Experts (VEREX), Ambassador Edward J Lacey, speaks in interview about the projected special conference of BWC states parties to examine the VEREX report [see 19 Nov]. Thus far, 53 states parties had requested the conference, either by direct communication to the depositaries or by signing a joint letter orchestrated by France. This was still some way short of the requisite majority, but he expects this to be achieved early in 1994. He says that he expects the conference to address such issues as whether adding BWC compliance measures would require a protocol or an amendment, and how intrusive such measures could be. He anticipates that the United States and other countries will table a variety of verification regime packages, and that the conferees will seek to complete work on a single package in time for the next BWC review conference, due in 1996. {*Arms Control Reporter* 701.B.120-121.}

Dr Lacey is leaving government to join the Center for Counterproliferation of Pacific Sierra Research Corporation as assistant vice-president. {*Defense News* 14 Feb}

**13–14 December** In Oslo, the Norwegian government hosts the fourth International Seminar against the Proliferation of Chemical and Biological Weapons [see 14 Dec 92] {UK FCO *Notes on Security and Arms Control* 1994 Jan}. The 24 Australia-Group countries and the European Commission participate, as do Belarus, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, the Russian Federation, Slovakia and Ukraine. The seminar is attended by 96 people and is opened by the Norwegian Minister of Trade and Shipping, Bjørn Tore Godal. It focusses on the practical challenges faced by states in introducing an effective export control system aimed at preventing proliferation of chemical and biological weapons. There are three sessions: (1) on policy, chaired by the Deputy Director General of the Norwegian Ministry of Foreign Affairs, Sten Lundbo; (2) on licensing, chaired by the Deputy Head of the Netherlands Ministry of Economic Affairs, George Penders; and (3) on enforcement, chaired by Cedric Andrew of UK Customs and Excise.

**13–16 December** In The Hague, the OPCW Preparatory Commission convenes for its fourth plenary session and adopts a report registering numerous decisions [see *Progress in The Hague*, pp 3–7 above]. {PC-V/12}

**14 December** In Bosnia-Herzegovina, Muslim forces in Sarajevo are reported by Tanjug news agency to have carried out a strong mortar attack using "82mm calibre shells...filled with poison gases, that is tear gas". {Tanjug 14 Dec in JPRS-TND 6 Jan} Two weeks previously, Radio Croatia had reported Muslim use of "chlorine-charged missiles" against Grbavica, a Serb suburb of Sarajevo, and also against Ponjave, a Croatian part of Vitez. {Radio Croatia 2 Dec in JPRS-TAC 18 Jan}

**14 December** The OPCW Provisional Technical Secretariat is currently staffed at professional and higher grades by 30 people, according to a list distributed by the Executive Secretary which provides a breakdown of the nationalities represented. Another four people have accepted professional-grade posts. The nationality breakdown of the 34 post-holders is as follows: Algeria (P4), Argentina (P5), Australia (D1), Belarus (P4), Belgium (P2), Brazil (P5), Cameroon (P5), Chile (P3), China (two posts: D1, P3), Czech Republic (P5), France (P5), Germany (two posts: P5, P5), India (P5), Iran (P5), Japan (P5), Netherlands (P3), Pakistan (P5), Peru (D1), Russia (three posts: D1, P5, P4), South Africa (P5), Sweden (P5), Switzerland (P4), UK (three posts: ASG, P5, P4), USA (four posts: D1, P5, P5, P4) and Zimbabwe (D1). {PC-V/A/6}

**15 December** In Hawaii, at the headquarters of US Pacific Command, Japanese and US officials are scheduled to meet to discuss the establishment of a joint theatre missile defence programme [see 22 Sep]. {*Defense News* 13 Dec}

**15 December** In Bonn, German Foreign Minister Klaus Kinkel presents a 10-point plan aimed at limiting the proliferation of weapons of mass destruction. He observes that the emphasis of the plan is on prevention rather than counteraction, and he describes it as a "complement" to the US Defense Counterproliferation Initiative [see 7 Dec]. He says that, according to recent findings, up to 20 states are currently developing nuclear carrier systems and that 10 are developing chemical or biological weapons. {DDP 15 Dec in JPRS-TAC 18 Jan; *Süddeutsche Zeitung* 16 Dec in JPRS-TND 18 Jan; *Atlantic News* 17 Dec}

**15 December** In the United States, the Chairman of the Senate Governmental Affairs Committee, John Glenn, releases the unclassified version of a report by the General Accounting Office on experimental open-air releases of radioactive materials, including those of 1948–52 in the radiological weapons programme. {*Daily Telegraph* 16 Dec; GAO/RCED-94-51FS}

**ca 15 December** The US Defense Department Defense Personnel Support Center awards a \$5.6 million contract to Survival Technology Inc renewing the "industrial base maintenance contract" [see 15 Jun] for nerve-gas antidote autoinjectors. The company has sold some 85 million such autoinjectors to US and foreign governments over the past 35 years. {*Defense News* 20 Dec}

**16 December** OPCW Preparatory Commission member states are asked by the Executive Secretary to complete a questionnaire on the inspectorate training courses (if any) which they are offering to conduct. {PC-V/B/11}

**16 December** In the Australian Senate, Foreign Minister Gareth Evans moves the second reading of the *Chemical Weapons (Prohibition) Bill 1993*, which is the draft legislation for the incorporation of the CWC into Australian law. Senator Evans also presents a detailed Explanatory Memorandum.

In addition to criminalizing chemical-weapons activities, the Bill establishes a system of permits for the production or use of the CWC-scheduled chemicals above specified thresholds. The permits will be issued by the Minister who will have the power to impose conditions on the permit, including a requirement for facilities to provide information to the Chemical Weapons Convention Office for the Australian declarations under the Convention. The CWCO, which will implement the Convention in Australia, will be established as a non-statutory body within an existing organisation within the Minister's portfolio. The Bill authorizes the Director of the CWCO to appoint national inspectors with powers of inspection. The Minister will also have the power to declare OPCW inspectors to be "Organization inspectors" who will have access to facilities by consent of the occupier or by warrant issued by a magistrate. The expectation is that Australia's annual contribution to the OPCW will be about \$1.7 million per year, and that the annual operating costs of the CWCO will be about \$0.25 million.

**16 December** In New York, the UN General Assembly acts on the report of its First Committee [see 19 Nov], adopting without vote 26 of the 44 recommended drafts, among them the resolution on the Biological Weapons Convention commending the VEREX report and authorizing the Secretary-General to service the projected special conference [see 13 Dec]. The Mexican proposal for a study on the non-proliferation of weapons of mass destruction, and the Canadian proposal for a new study on verification, are both voted through, despite Western opposition. {*Disarmament Times* 21 Dec}

**17 December** In Moscow, the Collegium of the Russian Ministry of Defence examines "progress in fulfilling the Russian Federation Government/Council of Ministers directive and the Russian Defence Minister's order on carrying out primary tasks to fulfil international commitments in the sphere of chemical disarmament" [see 8-12 Nov and 11 Nov], according to the Ministry's Information and Press Directorate. {*Krasnaya Zvezda* 18 Dec in FBIS-SOV}

**17 December** The US representative at the United Nations, Ambassador Madeleine Albright, indicates in interview that the US administration may be seeking to have new conditions imposed on Iraq as prerequisite for the lifting of the UN embargo [see 26 Nov]. In particular, she says that Iraq's compliance with other UN Security Council resolutions besides 687 (1991) must be taken into account in "any assessment of its readiness to rejoin society": "There has to be an overall package here". As to SCR 687 and its stipulation that Iraq abandons its weapons of mass destruction, she reaffirms the US requirement for effective ongoing monitoring and verification: "I've said we want a proven track record of 6 to 12 months' monitoring" [see also 27 Nov]. {*New York Times* 19 Dec}

**18 December** In The Hague, a seminar on National Implementation of the CWC is convened by the OPCW Provisional Technical Secretariat. Some 130 people from 58 countries are inscribed on the provisional list of participants; 56 countries in fact participate. {*OPCW Synthesis* 12 Jan} There are presentations by members of national delegations describ-

ing progress in their countries on the establishment of the Article VII national authorities. There are also presentations by the PTS, by SIPRI, by the Harvard Sussex Program and by Professor Barry Kellman, presenting the final version of his project's *Manual for National Implementation of the Chemical Weapons Convention* [see 1-4 Dec].

Iran, in a comment on an Australian Working Group A paper also distributed at the seminar, argues that the parenthetical sentence in Art II.2 of the Convention should be interpreted to mean that international transfer controls on chemicals other than those listed in the Schedules are contrary to the obligations of states parties "including those under Article VI, XI as reaffirmed in the preamble of the Convention". This intervention stimulates discussion on the significance of the "general purpose criterion" enunciated in Art II.1(a).

**21 December** In Bosnia-Herzegovina, Croatian forces have been using poison gas [see also 4 Oct] against the Bosnia-Herzegovina Army in heavy fighting around Dreznica, north of Mostar, according to Radio Sarajevo. {*Tanjug* 21 Dec in BBC *Summary of World Broadcasts* 23 Dec}

**21 December** The UN Security Council receives from the Executive Chairman of UNSCOM a sixth report [see 21 Jun] on the activities of the Commission. It covers the period 14 June to 14 December 1993. It records two changes in the composition of the Commission: Charles Duelfer replacing Pierce Corden as Deputy Executive Chairman, and Terrence Taylor replacing Ron Manley as UK commissioner. There are 35 staff in the New York office, 23 in the Bahrain Field Office, and 77 in the Baghdad Field Office.

The report records, in relation to UNSCOM 59, that the DB0 bomb had originally been suspected of having a BW application; Iraqi authorities categorized it as a failed prototype CW munition. The report also records that UNSCOM 63 — the largest and longest inspection thus far undertaken by the Commission [see 30 Oct] — had included searches for "possible hidden stocks of chemical weapons and biological weapons facilities". Helicopter-mounted ground penetrating radar had been used.

Destruction of CW munitions, agents and precursors is expected to be completed by March/April 1994. As of 6 December, a total of 28,332 munitions had been destroyed, as well as 17.8 kilolitres of tabun, 0.33 kl of GB, 60.5 kl of GB/GF nerve agent, 248 kl of mustard and 1471 kl of 14 types of precursor [see also 18 Aug].

As to information on suppliers of the Iraqi chemical and biological weapons programmes, Iraq had now provided the following: aggregate quantities of precursors and of empty munitions imported against companies and countries of origin; aggregate quantities of production equipment imported by type, capacity, material, company and country of origin; and, in the biological area, responses to questions about the sources of complex media, toxins, micro-organisms, aerosol generators and incubation chambers, in aggregate quantities by company and country of origin.

The report summarizes the routes of supply for these items, and for nuclear and missile items, as follows: "(a) Direct from the manufacturing company to Iraq; (b) Via a middleman to Iraq. In many of these cases, the manufacturing company did not know the eventual use to which its products would be put, although some of the companies might well have been in a position to suspect the purpose; (c) Via a third country; (d) Via a

second company in the same country. Transfers of this kind have not generally required export licences.” {S/26910}

**22 December** The Russian extreme-nationalist politician Vladimir Zhirinovskiy tells a press conference in Vienna that Russia, in something he calls *Elipton*, possesses weaponry far more formidable than its nuclear arms. He says that Elipton is not nuclear but has “the capacity to annihilate the whole world”. {*International Herald Tribune* 23 Dec} When visiting Croatia some six weeks later, he says that Elipton can kill by producing a massive impulse of sound which human beings are unable to withstand. {*Reuter in International Herald Tribune* 3 Feb} In the meanwhile there had been press speculation that Elipton was some sort of beam weapon able to “destroy the molecular structure of a target”. {*International Herald Tribune* 23 Dec; *Defence Week* 18 Jan}

**22 December** In Bosnia-Herzegovina, “shells carrying chemical charges have landed on Glavica” in Sarajevo, fired from Serbian positions [see also 14 Dec], according to the Bosnian 1st Corps Information Service. {*Radio Bosnia-Herzegovina* 22 Dec in JPRS-TND 18 Jan}

**22 December** US Department of Veterans Affairs officials confirm a report that 13 out of 15 babies born to Gulf-war veterans in the town of Waynesboro, Mississippi, have developed unexplained health problems. The veterans are from a unit, the 624th Quartermaster Company, some of whose members believe it had twice been under Iraqi CBW attack. Investigators of the putative ‘Gulf War Syndrome’ [see 29 Nov–3 Dec] reportedly say that this is the largest of a number of clusters of sick ‘Gulf babies’. {*Guardian* (London) 23 Dec}

**23 December** In Moscow, a press conference on the chemical-weapons programme of the former Soviet Union is convened by the Union for Chemical Safety, a public interest group seeking to raise awareness of environmental damage done during the Soviet era. The president of the Union, Dr Lev Fyodorov [see 8 Dec], estimates that tens of thousands of plant-workers died, for reasons which he explains, while producing chemical weapons, and that about a million people live in contaminated areas where, at some 300 locations, chemical weapons had been produced, stored, tested or destroyed. The dumping of chemical weapons into coastal waters had apparently continued until the mid-1980s. {*Washington Post* 24 Dec}

**23 December** The Russian Defence Ministry takes delivery from Germany of a mobile laboratory for monitoring the environment during chemdemil operations. The laboratory is to be deployed in Saratov oblast in early January. Germany will also be providing training courses in environmental monitoring at chemical-weapons destruction sites. {*ITAR-TASS* 23 Dec in FBIS-SOV 27 Dec}

**23 December** The US Department of Commerce Bureau of Export Administration publishes guidance on export-licence requirements in cases where the exporter knows or is informed of pertinent missile or CBW activities — the ‘catch-all’ controls.

The guidance includes definition of what is meant in the Export Administration Regulations by ‘development’, ‘production’ and ‘use’. It says: “‘development’ is related to all stages prior to ‘production’, such as: Design. Design research. Design concepts. Assembly and testing of prototypes. Pilot production schemes. Design data. Process of transforming design data

into a product. Configuration design. Integration design. Layouts.” {*Federal Register* 23 Dec pp 68029-31}

**24 December** Indian Prime Minister P V Narasimha Rao, speaking at the Ministry of Chemicals and Fertilizers in New Delhi, characterizes the CWC as a great step in the direction of disarmament, nondiscriminatory in its approach, and says that the most important pillar of any disarmament process is verification. India is not making any chemical weapons, he states, and has nothing to hide. He says that India plans to train its chemical industry in such a way that it is able to protect its commercial secrets while undergoing the inspection process. {*All India radio* 24 Dec in JPRS-TND 18 Jan}

**27 December** In Moscow, representatives of the European Union, Japan, Russia and the United States sign a protocol which will enable the Moscow-based International Science and Technology Center [see 27 Nov 92] to begin operating on a provisional basis while waiting for the new Russian parliament to ratify the original agreement. Ratification of the protocol by the European Parliament is expected in February. {*Arms Control Today* Jan/Feb}

**30 December** In Tokyo, the citizens’ group which maintains a data centre on Japan’s war responsibility states, in its December bulletin, that recently discovered Imperial Army war diaries contain details about how Japan had used germ warfare in China during World War II [see also 28 Nov]. The diaries, from the Strategy Section of General Staff Headquarters and from the Medical Affairs Section of the Army Ministry, had been found in June at the archives of the National Institute for Defence Studies by Professor Yoshiaki Yoshimi of Chuo University and Toshiya Iko, a lecturer at Rikkyo University. The BW incidents referred to included aircraft operations in the region of Changde during November 1941 and the release of mice carrying plague-infected fleas in Guangxin during August 1942. {*Kyodo* 30 Dec in FBIS-EAS 30 Dec}

**30 December** In Azerbaijan, Armenian forces in Karabakh use chemical weapons at Gural-Tepe in Beylagan rayon, so “sources close to the Defence Ministry of Azerbaijan” reportedly say three weeks later, citing a laboratory examination of soil samples and shell splinters during which traces of cyanide had been found. {*Turan* 21 Jan in *BBC Summary of World Broadcasts* 29 Jan}

**31 December** In Russia and the United States, as a deadline proposed three years previously arrives, health officials decide against destroying the last known remaining cultures of smallpox virus, agreeing to refer the decision on destruction to the World Health Assembly, advised by a WHO committee, in May 1994. {*International Herald Tribune* 27 Dec}

**1 January** The Hong Kong publication *Cheng Ming* reports a mutiny in an Anti-Chemical-Warfare company of the Chinese army garrisoned near Huainan. The incident had occurred in mid-November 1993; it had left five people dead of gunshot wounds. {*BBC Summary of World Broadcasts* 4 Jan}

**5 January** In Seoul, some 200 South Korean veterans of the Vietnam war reject the out-of-court settlement of \$30 million that had been offered in August following their class-action suit for damages against seven US manufacturers of Agent Orange and other Vietnam-war herbicides. The chairman of the Asso-

ciation for Agent Orange Victim Veterans of the Vietnam War says that the settlement offered by the companies is insufficient for the country's estimated 3000 Agent Orange victims. The suit had been brought in the State Court of Texas; a hearing is expected in April. {YONHAP 5 Jan in FBIS-EAS 5 Jan}

**5 January** The Croatian UN mission in New York complains that Muslim forces have again been using poison gas in battles in central Bosnia-Herzegovina [see 28 Nov and 1 Dec]. Its statement cites accounts obtained by General Zlatko Binenfeld [see 1 Oct] from civilians who had survived an attack on the village of Krcevina on 22 December and who had said they had begun to suffocate when the shells exploded: "Our eyes teared, we felt a metallic taste in our mouth, which forced us to vomit and left a terrible headache". {Tanjug 6 Jan in BBC *Summary of World Broadcasts* 7 Jan}

**6 January** In Egypt, *al-Jumhuriyah* publishes an interview with the Minister of State for War Production, Major General Muhammad al-Ghamrawi. Asked about foreign newspaper reports that Egypt is producing chemical weapons, General al-Ghamrawi had said: "We have an established and unchanging principle: We do not manufacture any type of chemical weapons. We only manufacture the equipment needed to protect ourselves against these weapons." {FBIS-NES 13 Jan}

**6 January** At the US Supreme Court in Washington, a friends-of-the-court brief is filed by the attorneys-general of 46 states urging the Court to permit litigation to be reopened against the manufacturers of Agent Orange. {*Boston Globe* 5 Jan}

**8 January** In Germany, Chancellery Minister Friedrich Bohl says in a radio interview that the country will have to loosen its export-control laws and regulations if they are to be brought into harmony with those of other European Union countries. {Reuter 8 Jan via NNN News 10 Jan} A proposal for liberalizing the export rules on arms and dual-use goods had been advanced by his party, the CDU, a month previously.

**10 January** Iraq is concealing chemical weapons in the oil pipes located between Fallujah and the Jordanian border, so *Al-Mu'tamar* reports. {Voice of the People of Kurdistan 10 Jan in BBC *Summary of World Broadcasts* 12 Jan}

**10 January** Bosnia-Herzegovina Army shells falling on Mali Mosunj in Vitez are said by Croatian Radio to be filled with chemicals [see also 20 Sep 93 and 5 Jan]. The broadcast continues: "People felt sick and dizzy and there were visible traces of an inky colour in those houses which were hit". {Croatian Radio 11 Jan in BBC *Summary of World Broadcasts* 12 Jan}

At a press conference in Bonn next day, the President of Croatia accuses Muslim forces of using chlorine shells in their current offensive against central Bosnian Croat villages. {DPA 11 Jan in JPRS-TND 31 Jan; *RFE/RL News Briefs* 10-21 Jan}

**10-11 January** In Brussels, NATO heads of state and government meet in summit session of the North Atlantic Council and take what NATO Secretary General Manfred Woerner later describes as a "great step forward" in transforming the alliance. {*Atlantic News* 12 Jan} Among the agreements reached is one on a common intensified effort against proliferation [see 8-9 Dec 92] {*Defense News* 10 Jan}, a matter on which sharp US-European differences have developed {*Bulletin of the Atomic*

*Scientists* Mar/Apr}. The relevant passage of the adopted Declaration states: "Proliferation of weapons of mass destruction and their delivery means constitutes a threat to international security and is a matter of concern to NATO. We have decided to intensify and expand NATO's political and defence efforts against proliferation, taking into account the work already underway in other international fora and institutions. In this regard, we direct that work begin immediately in appropriate fora of the Alliance to develop an overall policy framework to consider how to reinforce ongoing prevention efforts and how to reduce the proliferation threat and protect against it."

The heads of state and government also state in their Declaration that they "attach crucial importance" to, among other things, "the early entry into force of the Convention on Chemical Weapons and new measures to strengthen the Biological Weapons Convention". {*Atlantic News* 12 Jan}

**10-14 January** In The Hague, the OPCW Preparatory Commission's new Expert Group on Confidentiality under Working Group B convenes in the mornings. Antony Taubman of Australia is elected chairman. The Group agrees an approach to its work which "takes into account the need for concern about confidentiality to be balanced against the requirement for overall transparency and suitable intrusiveness in verification activities". Further, the Group agrees to focus its work on the development of a *Draft OPCW Policy on Confidentiality* intended to set out basic policy guidelines on confidentiality and then specify their operational application, hence addressing the specific tasks set for the Group in a coherent framework and providing an information resource to assist the Commission in co-ordinating a range of aspects of the confidentiality issue. It gives some attention to the projected staff "secrecy agreement", but the session is largely given over to producing the initial sections of the *Draft OPCW Policy* appended to the Chairman's Paper included in its first interim report. "Chairman's non-papers" addressing possible later sections are issued for subsequent consideration. {PC-VI/B/WP.1}

**10-21 January** In The Hague, the OPCW Preparatory Commission Expert Group on Chemical Industry Facilities reconvenes [see 4-8 Oct] in the afternoons under the continuing chairmanship of Adam Noble of the UK. It agrees its Third Report, which puts forward recommendations for the PTS, for the Expert Group on Declarations and for Working Group B. It proposes that the PTS should prepare fact sheets for its next combined meeting with representatives of industry (scheduled for 27-28 April) outlining the numerous understandings and clarifications it had just agreed, set out in the Chairman's Paper. The paper also includes the results of the Group's review of the *Draft Declaration Handbook* prepared by the PTS, and it tasks the PTS to produce a revised *Draft* by the last week of February. {PC-VI/B/WP.2}

**11 January** In the UK, the Director General of the Chemical and Biological Defence Establishment, Dr Graham Pearson, responds to a further series of detailed parliamentary questions about past UK research on CBW agents [see 20 Jul 93], including questions about the sharing of research findings with allied countries and about chemical agents transferred to Australia and Canada. Among the answers is an annual breakdown of the number of volunteers from the armed services used in tests at Porton since 1979, some of which tests involved exposure to CW agent; on average, 146 volunteers had been used each

year [see also 2 Dec 93]. {*Hansard (Commons)* written answers 11, 26 and 27 Jan}

**11 January** In Washington, at a briefing for Senate staffers, administration officials envisage the Senate giving its advice and consent to US ratification of the CWC [see 23 Nov 93] “by April or so”. The officials are told, however, that the process would probably take longer, in view of competing demands on the Senate. {*Arms Control Today* Jan/Feb}

**12 January** The OPCW Provisional Technical Secretariat now consists of 78 contractual staff of 34 nationalities. {*OPCW Synthesis* 12 Jan}

**13 January** In Tehran, a delegation of North Korean scientists, technicians and officers led by Air Force Commander General Cho Myongnok arrives for high-level talks with an Iranian team, led by Revolution Guard Commander General Mohsen Reza'i, on the development of new weapon systems, including medium and long range missiles {*Al-Sharq al-Awsat* (London) 14 Jan in FBIS-NES 18 Jan}

**14 January** In Moscow, an interview with Lt-Gen Gennadiy Yevstafyev, head of the department of control over arms and the proliferation of weapons of mass destruction in the Russian External Intelligence Service, is published by *Moskovskiye Novosti*. General Yevstafyev had said: “While the situation with nuclear weapons can be controlled (through combination of space facilities with operational information), this is very difficult to do where chemical weapons are concerned. It is believed that the real requirement of chemical weapons amounts to only 100-200 tons even in a major and prolonged regional conflict. The stocks of chemical weapons are in practice greater than these figures. But it is practically impossible to detect 100 and even 500 tons of hidden chemical weapons. Chemical compounds and agents can be kept in containers smaller than an ordinary barrel.” {*Yonhap* 15 Jan in *BBC Summary of World Broadcasts* 17 Jan; *Moscow News* 17 Jan}

**14 January** In Moscow, at their summit meeting, President Yeltsin and President Clinton adopt a number of joint statements, including one on *Non-Proliferation of Weapons of Mass Destruction and the Means of Their Delivery*. {*ITAR-TASS* 14 Jan in FBIS-SOV 14 Jan} This addresses several CBW issues, including a statement of support for the projected special conference of BWC states-parties [see 19 and 21 Oct 93], a reaffirmation of the site-visit and expert-meeting provisions of the September 1992 trilateral statement on biological weapons [see 9 Oct 93], and the possibility of additional US support for the Russian chemdemil programme.

Further, the two presidents “declare their resolute support for the Convention on the Prohibition of Chemical Weapons, and their intention to promote ratification as rapidly as possible and entry into force of the Convention not later than 1995”.

And: “To promote implementation of a comprehensive ban on chemical weapons, they welcomed the conclusion of the implementing documents for the Wyoming Memorandum of Understanding [see 23 Jun 93] and agreed to conclude work in as short a time as possible on the implementing documents for the bilateral Agreement on the Destruction of Chemical Weapons”. In this latter connection, a joint “plan of work” for 1994 is signed at official level which reportedly establishes a timetable for inventory of chemical weapons at Russian storage sites, and also makes reference to the still-pending selection of a US con-

tractor to work with Russia on the chemdemil programme. {*Chemical & Engineering News* 17 Jan}

During the joint presidential press conference, President Yeltsin responds as follows to a question about whether the new Russian parliament will constrain his relations with the West: “This parliament is wiser, more intellectual and more experienced. I believe that the upper chamber will, generally, pursue the line taken by the president and the government, while the State Duma will gradually reach that position and realize that to drag out and fail to ratify major international treaties and agreements, such as that concerning the destruction of chemical weapons and so on, is simply to show disrespect for their own people.” {*Russia TV* 14 Jan in *BBC Summary of World Broadcasts* 17 Jan}

**14 January** The OPCW Preparatory Commission Legal Adviser furnishes a legal opinion on certain provisions of the Verification Annex for old chemical weapons. He has rested his opinion on the primacy of implementation posing no risk to the object and purpose of the Convention. {PC-VI/B/1}

**16 January** In Bosnia-Herzegovina, Serb forces are reportedly using poison gas at Olovo. {*Radio Bosnia-Herzegovina* 16 Jan in *BBC Summary of World Broadcasts* 18 Jan}

**17 January** In Germany, the ‘Iraqi poison-gas trial’ [see 12 Jul 93] reopens in Darmstadt. The court received a joint report from two newly appointed expert witnesses, Professor Hellmut Hoffmann and Professor Wolfgang Swodenk, both formerly of Bayer AG. In contrast to the report by the previous expert (who had retired for health reasons), this expert opinion concludes that the plants which the firms Karl Kolb, Pilot Plant and Lab Consult in Dreieich had supplied to Iraq for installation at Samarra (Muthanna) — the now-destroyed plants codenamed *Ani*, *Mohamed*, *Ahmed* and *Meda* — were not “specially constructed” for the production of poison gas, but were instead multipurpose plants. The expectation now is, therefore, that the prosecution case against the defendants from the Dreieich firms will fail. The other defendants in the trial, from the firm Water Engineering Technik, are charged with illegal delivery to Iraq of munition plant. {*Frankfurter Rundschau* 14 Dec and 18 Jan}

**17 January** The UK government tells Parliament about the legislation it will introduce “as soon as parliamentary time becomes available” for implementing the Chemical Weapons Convention: “The...main elements will be rights of entry and immunity for [OPCW] inspectors, requirements for industry declarations and creation of offences in respect of non-compliance with the CWC”. {*Hansard (Commons)* written answer 17 Jan}

**17–20 January** Iran is conducting an amphibious military exercise, *Matyr Reysali Delvari*, on the Persian Gulf littoral involving units of the navy and the Islamic Revolution Guards Corps. The exercise has included “chemical attack operations by the imaginary enemy” and “defensive chemical, bacteriological and radiation operations”. {*Voice of the Islamic Republic of Iran* 19 Jan in *BBC Summary of World Broadcasts* 21 Jan}

**17–28 January** In The Hague, the OPCW Preparatory Commission Expert Group on Chemical Weapons Production Facilities reconvenes [see 11-15 Oct 93] in the mornings under the continuing chairmanship of Dr Graham Cooper of the UK, with Dr David Dougherty of the United States and Moshe Matri of

Israel as Friends of the Chair on, respectively, the issue of equipment and the elaboration of a model facility agreement. The Group produces its Second Interim Report. This presents a possible structure for a model facility agreement, but does not resolve differences on the verification regime. {PC-VI/B/WP.3}

**18 January** In Morocco, the Council of Ministers discusses the Chemical Weapons Convention and the draft law on the approval, in principle, of the Convention. {Morocco Radio 18 Jan in BBC *Summary of World Broadcasts* 21 Jan}

**18 January** In The Hague, the OPCW Preparatory Commission's new Committee on Relations with the Host Country meets for an inaugural session. {PC-V/12}

**19 January** The OPCW Provisional Technical Secretariat will periodically issue information relating to the work of the Preparatory Commission in areas of interest to the chemical industry, so the Executive Secretary announces. Industry representatives wishing to receive such material on a regular basis are advised to provide their mailing address to Mr Raúl Fernández at the PTS. {PC-VI/2; Raul Carlos Fernandez in *Chemical & Engineering News* 24 Jan}

**19-21 January** In Copenhagen, the Ad Hoc Working Group on Dumped Chemical Munition of the Helsinki Commission convenes for its third meeting [see 28-30 Sep 93] and finalizes its *Report on Chemical Munitions Dumped in the Baltic Sea* for the 16th meeting of the Commission, due to take place during 8-11 March. The report contains a compilation of information provided by Commission member-states, as well as by observers from Norway, the UK and the USA, on chemical munitions dumped in the Helsinki Convention area during 1945-47. The quantity dumped is estimated at around 40,000 munition-tonnes or 13,000 agent-tonnes. The report includes detailed analysis of the hazards, but recommends that the munitions not be recovered. Further investigations are proposed.

**20 January** In Moscow, the President of the private Union for Chemical Safety, Dr Lev Fyodorov, states in interview that, continuing into the 1980s, the former USSR disposed of some 100,000 tons of chemical weapons by ocean-dumping at 12 different sites in the Sea of Japan, the Sea of Okhotsk, the Kara Sea and parts of the Barents Sea. {Kyodo 20 Jan via *Military News* 28 Jan} [See also 11 May and 23 Dec 93]

**21 January** US acting Assistant Defense Secretary Edwin Dorn announces that the Departments of Defense, Veterans Affairs and Health & Human Services are joining in a fresh investigation of the putative 'Gulf war syndrome' [see 22 Dec 93]. In May, a 'Persian Gulf Veterans Coordinating Board' is to consider the findings of research projects now being undertaken, including a study of the possibility of illness having been caused by traces of chemical agent drifting south into the war zone from bombed Iraqi installations. Dr Dorn says: "We have undertaken more than 20 studies that will look at every plausible cause from parasitic disease to environmental pollutants [see 16 Nov 93] to chemical agents". {*Dallas Morning News*, *Boston Globe*, *Guardian* (London) 22 Jan; *Chemical & Engineering News* 31 Jan}

**21 January** In Washington, unidentified US officials say in interview that a German ship, the *Asian Senator*, carrying cargo from China to the Middle East had been inspected in Saudi

Arabia and found to be shipping "illegal chemicals". {*Los Angeles Times* in *Washington Post* 23 Jan} The episode, which took place during December, is reportedly noted in a Defense Department document recording successful counterproliferation interdiction efforts during 1993; Iraq is identified as the intended destination of the shipment. {*Defense News* 24 Jan} German government spokesman Dieter Vogel subsequently confirms the story, describing the shipment as two containers loaded with several hundred barrels of ammonium perchlorate, a fuel ingredient for the Iraqi missile programme {DDP/ADN 24 Jan in FBIS-WEU 25 Jan 94; *Washington Times* 26 Jan} — some 35 tons of the chemical. {*Jerusalem Post* 19 Feb} The inspection had been conducted by Saudi and German officials at the Red Sea port of Jiddah. {AP 26 Jan via NNN News 26 Jan}

**21-26 January** In Iraq, an UNSCOM team led by Deputy Executive Chairman Charles Duelfer is preparing the way both for the start of long-term monitoring and for the next round of high-level technical talks [see 30 Nov]. On 15 January Iraq had provided a thousand-page declaration of information on its relevant industries. {Reuter 20 Jan via NNN News 20 Jan; AP 26 Jan via NNN News 26 Jan} The UNSCOM plan for ongoing monitoring and verification requires such a declaration [see 2 Oct 91].

**24 January** In Moscow City Court, the secret trial of Dr Vil Mirzayanov begins, postponed from 6 January. He is charged with divulging state secrets [see 13 May 93] and with violating an employee secrecy agreement. {*Chemical & Engineering News* 24 Jan} The court rejects his contention that the proceedings against him violate the new Russian Constitution (in that the law on state secrets under which he is charged has not been published), whereupon he declines to participate any further {*Washington Post* 25 Jan}; and by not attending when the trial resumes next day — instead speaking at a press conference hastily organized by the Russian-American Press and Information Center and the Foundation for the Protection of Glasnost — he renders himself liable to arrest and detention, as indeed happens on the day following {*New York Times* 28 Jan}, by which time the trial has been suspended, leaving him in Matrosskaya Tishina prison until it resumes.

Five volumes of evidence against Dr Mirzayanov have been accumulated by the prosecution and made available to the defence {*Los Angeles Times* 5 Jan}, including a number of hitherto highly classified documents. The CW agent identified as "A-232" [see 8 Dec 93] is said to be mentioned in this material. Neither Dr Mirzayanov nor anyone else has publicly disclosed its identity, but Dr Vladimir Uglev [see 9 Jun 93], who says it was he who had originally synthesized the agent, threatens to do so. {Interfax 24 Jan in JPRS-TND 31 Jan; *Izvestiya* 25 Jan via Russian Press Digest 26 Jan}

**24-28 January** In The Hague, the OPCW Preparatory Commission Expert Group on Equipment reconvenes [see 18-22 Oct 93] in the afternoons under the continuing chairmanship of Dr Henk Boter of the Netherlands, with Dr Ray McGuire of the United States leading the drafting group as Friend of the Chair. The Group agrees its Third Interim Report, which puts forward recommendations for Working Group B. Among these are recommended criteria for the OPCW to use in selecting its Designated Laboratories: that the labs should have established an internationally recognised quality assurance system, that the labs should have obtained accreditation by an internationally recognised accreditation body for tasks for which they are

seeking designation, and that the labs should regularly participate and perform successfully in inter-laboratory proficiency tests; analytical labs should obtain satisfactory results analyzing control samples distributed by the OPCW. {PC-VI/B/WP.4}

**24–28 January** In Paris, the NATO Advisory Group for Aerospace Research and Development (AGARD) convenes a meeting of 19 government and industry officials from France, Germany, Italy, the UK and the USA to advance the study on nonlethal technologies [see 16-17 Nov and 7 Dec 93] which NATO's International Military Staff has commissioned from it. The US delegation includes the manager of classified nonlethal programmes at Los Alamos National Laboratory, John B Alexander. The focus of the study is on ways of enforcing no-fly zones without having to shoot down violating aircraft. According to the director of the study, Colonel Francis Lenne of the French Air Force, speaking after the meeting, the most promising technologies include directed-energy weapons to blind pilots temporarily, chemical and biological agents to degrade an aircraft's structure or fuel, and electromagnetic energy to disable the aircraft's computers. {*Aviation Week & Space Technology* 24 Jan; *Defense News* 7 Feb}

**25 January** In the US Senate, Director of Central Intelligence James Woolsey gives public testimony before the Select Committee on Intelligence. In his prepared statement he has written: "Today there are 25 countries — many hostile to our interests... — that are developing nuclear, biological, or chemical weapons. More than two dozen countries alone have research programs underway on chemical weapons." The prepared statement also notes "successful interdictions", among them Italian Government action in preventing "shipment of equipment to Iran which could be used in the production of chemical warfare materials".

In his oral testimony to the Committee, the DCI says that, in the 21st century, CBW weapons may pose the kind of threat that nuclear weapons once did. {*New York Times* 26 Jan} "Nuclear weapons are, of course, a very serious proliferation problem, but they require a good deal more infrastructure, particularly to obtain fissionable material, than biological weapons.... Biological weapons can be extraordinarily lethal and rather small and you have the same kind of problem with distinguishing the dual-use material or technology that you have with chemical weapons." {*Aerospace Daily* 31 Jan}

**25–26 January** In Brussels, NATO member-states agree a structure of three new high-level committees to coordinate the intensified antiproliferation efforts agreed at the NATO summit earlier in the month [see 10-11 Jan]. {*Defense News* 31 Jan}

Meanwhile, the US Defense Department is reportedly preparing to launch five working groups in support of the Defense Counterproliferation Initiative [see 7 Dec 93]. {*Inside the Pentagon* 20 Jan}

**27 January** In the UK, the formation of a new pressure group is announced comprised of former servicemen who had taken part as volunteers in experiments at the Porton Down CBW defence R & D establishments since World War II [see 11 Jan]. The group is planning to press the government to release detailed information about the nature of the tests in which they were involved, and also to conduct a long-term follow-up study of the health of volunteers. {*Nature* 27 Jan}

Responding to this announcement, the Director General of CBDE Porton Down, Dr Graham Pearson, publishes a letter in

*Nature* [see 2 Dec] setting out UK policy and practice on human-volunteer experiments. He also writes: "It is not in the national interest to publish details of volunteer studies as this information could be of significant benefit to a potential aggressor as he would be aware of the current state of our work to develop improved protective measures." {*Nature* 24 Feb}

**27 January** In the UK, in response to Parliamentary questions, the Director General of the Chemical and Biological Defence Establishment at Porton Down releases information about experimental releases of BW agents at sea. Five operations are disclosed: (a) Operation *Harness*, in Caribbean waters off the Bahamas from December 1948 to February 1949, conducted in order to determine the practicability of conducting BW trials at sea; (b) Operation *Cauldron*, in Scottish waters off Stornaway in the Isles of Lewis during May-December 1952, which established that the pathogens of brucellosis and plague could constitute a hazard if used as BW agents; (c) Operation *Hesperus*, in Scottish waters during May-August 1953, which, through releases of brucellosis and tularaemia pathogens, aimed to consolidate data and compare dissemination and collection methods; (d) Operation *Ozone*, in Caribbean waters 20 miles off Nassau during February-May 1954, when data on the decay of viability at longer ranges was obtained; and (e) Operation *Negation*, in Caribbean waters off the Bahamas from November 1954 to March 1955, which consolidated data from the previous trials. {*Hansard (Commons)* written answers 27 Jan and 21 Feb}

A subsequent question about the persistence of the pathogens released is answered as follows: "The biological agents in these trials were disseminated from point sources either instantaneously or for a few minutes. As soon as the agents began their down-wind travel as an aerosol, the living microorganisms started to die naturally as a result of exposure to such factors as solar radiation. In addition, the agent would be diluted continuously to an increasing extent in the atmosphere so that the concentration rapidly dropped below one that might present any danger. Finally, gravitational forces would cause agent particles to be deposited on the sea. Any agent particles falling into the sea would be massively diluted as well as killed by the bactericidal and virucidal effects of the sea water. Thus dilution into the atmosphere, deposition of particles into the sea and the progressive decay of the microorganisms with ensuing loss of viability and infectivity meant that the biological agent aerosols have a finite life. In effect, the biological agents ceased to exist after some period of time and distance down-wind. Conditions were selected for these trials and downwind safety areas delineated from which shipping was kept away to ensure that there was no hazard to the public or to the environment." {*Hansard (Commons)* written answers 9 Feb}

**28 January** In Moscow, US Ambassador Thomas Pickering, speaking at a press conference, responds as follows to a question about the Mirzayanov trial [see 24 Jan]: "With respect to Vil Mirzayanov, it's a case in which we have taken a great deal of interest and in which we continue to be interested and which I have discussed a number of times with senior officials of the Russian Federation government. It seems more than strange to us and more than usual that someone could be either prosecuted or persecuted for telling the truth about an activity which is contrary to a treaty obligation of a foreign government. We will continue to follow this case with a great deal of interest." {Federal News Service transcript}

**28 January** OPCW Preparatory Commission member states are asked by the Provisional Technical Secretariat to provide documents for the OPCW data bank on protection against chemical weapons. {PC-VI/B/3}

**29 January** The Norwegian Army has taken delivery of ten Chemical Agent Monitors for deployment with Norwegian troops serving with UNPROFOR in former Yugoslavia. The CAMs have been reprogrammed to be able to detect industrial chemicals, such as chlorine. {*Jane's Defence Weekly* 29 Jan} Parties to the conflict in Bosnia have threatened to use such chemicals as weapons [see 19 Jun and 8 Nov 93].

**31 January** In Germany, at the 'Iraqi poison-gas trial' in Darmstadt [see 17 Jan], three of the seven defendants, from the firm Karl Kolb and its associates, are acquitted. The prosecution had not shown that the chemical plant which the firm had delivered to Samarra during 1983-85 was "specially designed" for poison-gas production; only in 1987 had the applicable export law been extended to cover, not just "specially designed", but also "suitable" — i.e., multipurpose — plant. Proceedings against the four other defendants, from the Hamburg-based company WET, are continuing. {*Frankfurter Rundschau* and *Süddeutsche Zeitung* 1 Feb}

**31 January–4 February** In The Hague, the OPCW Preparatory Commission Expert Group on Financial and Staff Regulations reconvenes [see 8-12 Nov 93] in the mornings under the continuing chairmanship of Sarvajit Chakravarti of India. It completes its examination of the consistency of the Financial Rules and the Staff Rules made by the Executive Secretary with the Financial Regulations and Staff Regulations of the Commission. It issues Final Reports on both topics. {PC-VI/A/WP.3 and PC-VI/A/WP.4}

**31 January–4 February** In The Hague, the OPCW Preparatory Commission Expert Group on Old and Abandoned Chemical Weapons reconvenes [see 22-26 Nov 93] in the afternoons under the continuing chairmanship of Dr Peter Krejsa of Austria. Much of its work is on how to define the usability of old chemical weapons produced between 1925 and 1946. The Group agrees its Second Report, which puts forward several recommendations to Working Group B. {PC-VI/B/WP.5}

**1 February** In Moscow, the head of the public relations department, Igor Vlasov, of the President's Committee on CBW Convention Problems says on radio that the amount of Russia's chemical weapons inherited from the former USSR is 40,000 tonnes of toxic substances, including 32,200 tonnes of organophosphorus toxic substances stored in aviation, missile and artillery charges, and 7700 tonnes of skin-affecting toxic substances, such as mustard gas, lewisite and mixtures thereof [see also 8 Dec 93]. {*Mayak Radio* 1 Feb in *BBC Summary of World Broadcasts* 12 Feb} In a later interview, he repeats this and says: "The places where they are stored are the town of Shchuchye in Kurgan Oblast, the settlement of Kizner in Udmurtia, the settlement of Maradykovskiy in Kirov Oblast, the settlement of Leonidovka in Penza Oblast and the town of Pochep in Bryansk Oblast. In the town of Kambarka (in Udmurtia) there is a storage facility for lewisite, and in the settlement of Gorny in Saratov Oblast there is a small amount of toxic agents such as mustard gas, lewisite and their mixtures." {*Mayak Radio* 4 Feb in *BBC Summary of World Broadcasts* 9 Feb}

**1–10 February** In Iraq, an 11-person UNSCOM chemical inspection team led by Horst Reeps of Germany, identifies and tags 250 items of equipment Iraq had used in the production of chemical weapons. Speaking at the end of the mission, Chief Inspector Reeps tells reporters: "Our main aim was to get more information on the planned use of this equipment in the future. Iraq has said it intends to make use of them for the production of pesticides, pharmaceuticals and other chemicals". He says, further, that some of the equipment had never been used, some used on a regular basis, and some would be the subject of new discussions with the Iraqis on their planned use. {AP 30 Jan via NNN News 31 Jan; AFP 11 Feb in *BBC Summary of World Broadcasts* 15 Feb}

**2 February** In Jakarta, the director of International Organization Affairs in the Indonesian Foreign Ministry, Hasan Wirayuda, states at a press conference that Indonesia is planning to ratify the CWC by the end of 1994. An interdepartmental committee is preparing for the ratification, comprising representatives of the ministries of industry, defence and security, trade, and health, the Armed Forces Headquarters, the Agency for the Assessment and Application of Technology, and Surveyor Indonesia Co Ltd. {*Antara* 3 Feb in *BBC Summary of World Broadcasts* 5 Feb}

**2 February** In Washington, the French Embassy hosts a symposium on Peacekeeping and Humanitarian Assistance. A US Army officer from Fort Benning, Lt-Col Michael Smith, speaks in his presentation of an Army priority requirement for nonlethal weapons, saying in particular that an alternative to CS gas is needed for crowd control and disabling combatants. He goes on to list a variety of other nonlethal technologies [see 24-28 Jan] in which the Army is interested. {*Defense Daily* 3 Feb}

**2–6 February** UNSCOM Executive Chairman Ekéus is in Iraq for a new round of high-level talks [see 22 Nov 93], including technical talks [see 30 Nov 93], about the preconditions for lifting the UN embargo [see 17 Dec 93]. {AP 6 Feb in NNN News 7 Feb; *New York Times* 13 Feb} In a joint end-of-talks statement, he and Iraqi Deputy Prime Minister Tariq 'Aziz say that both sides "expressed their readiness to expedite the process of establishing ongoing monitoring and verification in a spirit of goodwill for the sake of realizing their common objective". There is to be another round of high-level talks during the first half of March. {INA 6 Feb in FBIS-NES 7 Feb; AFP 7 Feb in FBIS-NES 8 Feb}

Ambassador Ekéus visits Kuwait after leaving Iraq. Television there reports him as stating that, as regards Iraqi chemical weapons, UNSCOM did not feel reassured: there was still a lack of complete information from Iraqi officials which would enable the Commission to confirm that all these weapons had been destroyed or removed. Kuwait Radio later reports him as saying that, as regards the Iraqi biological-weapons programme, UNSCOM was relatively confident, but not fully satisfied, that all the essential elements had been treated. {Kuwait satellite channel TV 6 Feb in *BBC Summary of World Broadcasts* 8 Feb; Radio Kuwait 7 Feb in *BBC Summary of World Broadcasts* 9 Feb; Reuter in *Washington Times* 7 Feb}

**3 February** The US firm Raytheon Engineers & Constructors, as part of a consortium headed by the German concern Lurgi Umwelt-Beteiligungs Gesellschaft [see 11 Nov 93], has obtained a contract from the Russian government for the development of a concept for, and a prototype of, a chemdemil plant to

be built in Saratov Oblast. The firm's press department says that the concept for the enterprise should be ready in March. Development of the concept is being financed by the Federal German government, which has allocated DM 3.2 million for the purpose. {ITAR-TASS 3 Feb in *BBC Summary of World Broadcasts* 8 Feb; *Aviation Week & Space Technology* 14 Feb}

**4 February** In Moscow, the trial of Dr Mirzayanov [see 28 Jan] resumes. ITAR-TASS reports that President Yeltsin has been briefed in detail on the case by his national security adviser Yuriy Baturin, who had himself spoken at length with Dr Uglev [see 24 Jan] and talked to the news agency about the "anti-constitutional" character of the trial — and the possibility, therefore, of it being cancelled. {ITAR-TASS 4 Feb in *BBC Summary of World Broadcasts* 9 Feb}

**4 February** In Washington, the National Research Council issues the recommendations on chemdemil developed by its Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Program [see 10 Jun]. {*Sun* (Baltimore) 6 Feb; *Chemical & Engineering News* 14 Feb} Under the 1993 Defense Authorization Act [see 1 Oct 92], the Army now has 60 days to submit to the Congress its own assessment of alternatives, suitably reflective of the NRC recommendations. [See box right]

**7 February** In The Hague, the OPCW Preparatory Commission Expert Group on Training reconvenes [see 18–22 Oct 93] for a five-day session, meeting in the mornings. {PC-V/12}

**7 February** In The Hague, the OPCW Preparatory Commission Expert Group on Chemical Weapons Storage Facilities reconvenes [see 22–26 Nov 93] for a five-day session, meeting in the afternoons. {PC-V/12}

**7 February** In the UK, the Director-General of the Chemical and Biological Defence Establishment at Porton Down responds as follows to a Parliamentary question about experiments involving human beings at his establishment [see 27 Jan]: "The role of the CBDE is to ensure that the UK Armed Forces have effective protective measures against the threat that chemical or biological weapons may be used against them. In order to carry out this work, it is necessary to use volunteers to: (a) assess the ability of Service personnel to function with new equipment and procedures, (b) develop medical countermeasures to protect Service personnel, and (c) evaluate the effects of very low and medically safe concentrations of CW agents on the ability of unprotected personnel to operate normally. No studies involving volunteers are carried out unless there is a clear military need and a detailed protocol has been reviewed and approved by an independent Ethics Committee in accordance with the guidelines laid down by the Royal College of Physicians. The volunteers come from all three Services and from both sexes. The CBDE Ethics Committee was established in July 1991. This Committee follows the guidelines laid down by the Royal College of Physicians of London and its membership includes lay members, members of both sexes from the local community, a nurse and a general medical practitioner. The Ethics Committee has subsumed previous arrangements for the ethical review of proposed volunteer studies. For some 30 years, a committee on the safety of human experiments had been set up at this establishment involving all the medical officers on the staff of the establishment whose task was to review all the protocols for proposed volun-

## Disposal of US chemical weapons: NRC recommendations

The existing system mechanically separates stockpiled items into four different streams. These are liquid chemical agent; energetics (explosives and propellants) and small metal components; large metal components; and dunnage. Each is processed in a separate incinerator, with treatment of effluent gases to remove solid particles and gaseous pollutants. Brines from the treatment process are concentrated by evaporation and stored for land burial. The recommendations of the NRC Committee include the following:

- Disposal should continue on schedule with the existing system, unless and until alternatives are developed and proven to offer safer, less costly, or more rapidly implementable technologies, without sacrifice in any of these areas.
- Any disposal system should be designed to process separately liquid chemical agent, energetics, metal parts, and dunnage. The cryofracture process precludes such separate processing and the Committee does not recommend it.
- Consideration should be given to the addition of activated charcoal filters for removing traces of organic pollutants from gaseous incinerator effluents.
- There is no acceptable alternative to incineration for treatment of energetics and metal components.
- As an alternative to the present technology, chemical neutralization should be examined as a possible first step for destruction of liquid chemical agent.
- Chemical neutralization of agent GB is an established technology. Chemical neutralization of agent VX and mustard is presently under study.
- The products of chemical neutralization of liquid chemical agents will require further treatment before ultimate disposal. Four alternative procedures for possible use following chemical neutralization are recommended for consideration. These are (1) incineration; (2) high-temperature, high-pressure wet air oxidation, possibly followed by biodegradation; (3) supercritical water oxidation; and (4) biodegradation. Except for incineration, each of these follow-on processes is in the stage of research or development.

teer studies to ensure that they were as safe as possible; this committee had the right of veto. Following such reviews, protocols were then considered by an ethical sub-group of the Medical Committee of the Defence Scientific Advisory Board, which involved independent experts." {*Hansard (Lords)* written answer 7 Feb}

**7 February** The US Defense Department publishes details of the research and development funding sought in its Fiscal Year

## CWC Non-Signatory States

(as of 14 March 1994)

Angola	Tuvalu
Botswana	Vanuatu
Chad	Bosnia-Herzegovina
Egypt	Macedonia, FYR of
Lesotho	Uzbekistan
Libya	Yugoslavia
Mozambique	
Sao Tome & Principe	Antigua & Barbuda
Somalia	Barbados
Sudan	Belize
	Grenada
Bhutan	Jamaica
Iraq	St Christopher & Nevis
Jordan	Suriname
Kiribati	Trinidad & Tobago
Lebanon	
North Korea	Andorra
Solomon Islands	Monaco
Syria	
Taiwan	<i>156 states have signed</i>
Tonga	<i>the CWC</i>

1995 budget request. For the new 'Joint Biological Defense Program' programme-element, \$52.895 million is requested. {*Aerospace Daily Defense Budget Supplement* 23 Feb}

**8 February** In Iran, during an address to air force personnel, Ayatollah Khamene'i responds as follows to foreign accusations that Iran is acquiring chemical weapons: "We shall do anything which conforms to our principles, and if we deem it necessary we shall manufacture or obtain weapons, as we did during the imposed war. But we do not seek to obtain and use banned weapons, because we respect our principles and faith." {*Voice of the Islamic Republic of Iraq* 8 Feb in *BBC Summary of World Broadcasts* 10 Feb}

**9 February** In Washington, Senator Donald Riegle [see 9 Sep 93] announces that exports of biological agents to Iraq had been licensed by the Department of Commerce during 1985-89. The exporter had been American Type Culture Collection, a nonprofit body collecting and distributing biological samples worldwide. Its associate science director confirms that, in response to requests from Iraqi government representatives, cultures of *Bacillus anthracis* and *Clostridium botulinum* had been shipped. Senator Riegle says that ATCC had been licensed to export at least three other biological agents as well, according to Commerce Department records obtained by the Senate Banking Committee, of which he is chairman. {*New York Times* and *Washington Post* 10 Feb}

**14 February** Moscow City Court approves a petition from the prosecutor in the Mirzayanov case [see 4 Feb] that the case be referred back to the Procurator-General for further investigation. There is expectation that the charges will now be dropped. Dr Mirzayanov continues to be held in custody, but is released eight days later on the condition that he remain in Moscow. {*TAR-TASS* 22 Feb in *BBC Summary of World Broadcasts* 25 Feb; *Science* 25 Feb}

**14 February** In The Hague, the OPCW Preparatory Commission Expert Group on Technical Cooperation and Assistance reconvenes [see 29 Nov-3 Dec 93] for a five-day session, meeting in the mornings. {PC-V/12}

**14 February** In The Hague, the OPCW Preparatory Commission Expert Group on Safety Procedures reconvenes [see 15-19 Nov 93] for a five-day session, meeting in the afternoons. {PC-V/12}

**15 February** British Defence Secretary Malcolm Rifkind, during a lecture at the Centre for Defence Studies at King's College London, announces that a 2-year series of studies is being launched to determine whether Britain should develop an anti-ballistic missile defence network. {*Defense News and Aviation Week & Space Technology* 21 Feb}

**15 February** In the United States, at White Sands Missile Range, New Mexico, another *Storm* re-entry vehicle simulating a CW missile warhead is successfully intercepted by an ERINT hit-to-kill missile [see 30 Nov 93]. The target had carried a bulk fill of water to simulate the CW-agent fill, and most of it was vapourized during the impact. Four days previously, the Army System Acquisition Review Council had selected the Loral Vought ERINT in preference to the Raytheon multimode seeker *Patriot*, which has a steerable blast/fragmentation warhead, as its choice for the Pac-3 missile development programme, the top priority in US theatre missile defense efforts. {*Aviation Week & Space Technology* 21 Feb}

**16 February** In Iraq, the director of the Military Industrial Organization, Lt-Gen Eng Amir Muhammad Rashid, issues a statement suggesting that UNSCOM Executive Chairman Ekéus has become a tool of US political manoeuvres against Iraq by giving the unjustified impression that Iraq was continuing to withhold information on chemical weapons [see 2-6 Feb], as in an interview broadcast the day previously on the US television network CNN. {*INA* 16 Feb in *BBC Summary of World Broadcasts* 18 Feb}

*ca* **16 February** Zimbabwe joins those BWC states-parties that have requested the convening of a Special Conference to examine the VEREX report [see 13 Dec 93]. The requisite majority is thereby achieved.

**18 February** In Russia, people working at the Shikhany CW research institute and proving ground [see 1 Jul 93] have been on indefinite unpaid leave since the beginning of the month, such are the financial difficulties now prevailing there. {*Russia TV* 18 Feb in *BBC Summary of World Broadcasts* 21 Feb}

**21 February** In Germany, the 'Iraqi poison-gas trial' in Darmstadt [see 31 Jan] is suspended pending an application by the defendants to the European Court in Luxembourg. {*Frankfurter Rundschau* 22 Feb}

**21 February** In The Hague, the OPCW Preparatory Commission's new Expert Group on Transitional Arrangements under Working Group A convenes for a five-day session, meeting in the mornings. It is mandated to consider the legal, technical, financial, structural and administrative implications of the transition from the Commission to the OPCW. {PC-V/12}

**21 February** In The Hague, the OPCW Preparatory Commission Expert Group on OPCW Building reconvenes [see 1-5 Nov 93] for a five-day session, meeting in the afternoons. {PC-V/12}

**21 February** The UK government responds as follows to a question in parliament about British Gulf-war veterans suffering from the putative 'Gulf war syndrome' [see 21 Jan]: "[The Defence Ministry] has applied standard epidemiological and statistical criteria, universally employed by the medical profession when researching existing or possible new diseases, in judging the scientific merits of all information received relating to the alleged Desert Storm syndrome. The application of such criteria to information available to date has not identified any scientific evidence proving the existence of a new medical condition peculiar to service in the Gulf conflict." {*Hansard (Commons)* written answers 21 Feb}

Lawyers acting on behalf of some 250 British veterans who believe themselves to be suffering from the syndrome are reportedly preparing to lodge claims for £25 million in compensation. {*Sunday Times* (London) 27 Feb}

**23 February** The UK Ministry of Defence, under contract to the US Ballistic Missile Defense Organization, is to evaluate an air-defence warhead with penetrator projectiles developed by the Ministry for application against missile-borne chemical and biological weapons. Further, the research effort, announced in *Commerce Business Daily*, will use models and facilities owned by the Ministry to assess CBW threats, compile and correlate US and UK data on the properties of CBW weapons, and further develop simulations of non-nuclear defeat mechanisms for CBW weapons and potential hardening countermeasures. {*Defence Daily* 23 Feb}

**24 February** US Commerce Secretary Ronald H Brown releases the administration's proposed new export control legislation, intended to take the place of the 1979 Export Administration Act. He says: "We feel it strikes the critical balance between nonproliferation concerns and economic interests". {*New York Times* 25 Feb}

**28 February** UNSCOM scientists reportedly conclude it to be unlikely that the CW attacks alleged to have taken place in the southern marshlands of Iraq at the end of September [see 20-21 Nov 93] in fact occurred. No traces of CW agent had been found in the samples brought back by the investigators. {Inter Press Service 28 Feb in *Military News* 4 Mar} The samples had been analyzed in the UK and the USA. {*New York Times* 1 Mar}

**28 February** In The Hague, the OPCW Preparatory Commission Expert Group on Challenge Inspection reconvenes [see 15-19 Nov 93] for a five-day session, meeting in the mornings. {PC-V/12}

**28 February** In The Hague, the OPCW Preparatory Commission Expert Group on OPCW Headquarters Agreement reconvenes [see 23-26 Aug 93] for a five-day session, meeting in the afternoons. It is mandated to elaborate a draft OPCW Headquarters Agreement. {PC-V/12}

**28 February** In the United States, the Committee to Review the Health Consequences of Service during the Persian Gulf War holds its first public hearing. The Committee, convened in January by the Departments of Defense and Veterans Affairs [see also 1 and 9 Nov 93 and 21 Jan], comprises 18 scientists chaired by John Bailar III of McGill University. An interim report is expected from it in about a year's time. {AP in *Washington Post* 2 Mar}

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## Forthcoming Events

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The 6th plenary session of the OPCW Preparatory Commission will take place in The Hague during 11-15 April 1994.

The Preparatory Committee for the Special Conference of States Parties to the Biological Weapons Convention will convene in Geneva during 11-15 April 1994.

The Second Moscow Conference on Chemical and Biological Arms Control, Demilitarization and Conversion, MOSCON 94, will take place in Moscow during 20-22 April 1994, again under joint Russian-US auspices.

The US Army Worldwide Chemical Conference XIII, including the American Defense Preparedness Association's 1994 NBC Operations Symposium, will take

place at the Army Chemical School, Fort McClellan, Alabama, 20-23 April 1994.

The OPCW Preparatory Commission Expert Group on Chemical Industry Facilities will have its second meeting with representatives of the chemical industry in The Hague during 27-28 April 1994.

The US Arms Control and Disarmament Agency, in conjunction with EAI Corporation, will be conducting a new series of briefings on the CWC for US chemical and related industries. The venues are: Atlanta 12 Apr, New Orleans 15 Apr, Las Vegas 29 Apr, Baltimore 3 May, Boston 5 May and Chicago 11 May.

The US Defense Nuclear Agency will be sponsoring its 3rd Annual International Conference on Controlling Arms during

16-19 May 1994 at Virginia Beach, Virginia.

The Finnish Scientific Committee for National Defence, Research Centre for the Defence Forces and NBC Defence School are hosting their second International Symposium on NBC Defence during 25-26 May 1994 at Keuruu, Finland.

The Pugwash Study Group on Implementation of the Chemical and Biological Weapons Conventions will hold its second workshop during 27-29 May 1994 in Noordwijk, Netherlands.

The 7th plenary session of the OPCW Preparatory Commission will take place in The Hague during 27 June-1 July 1994.

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## Recent Publications

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- Antonov, Nikolai S. "[Post-Convention chemical weapons]", *Mezhdunarodnaya Zhizn*, 1993 no 9, pp 81-86 (in Russian). For an English translation, see Foreign Broadcast Information Service [Washington], *JPRS Report: Arms Control* no JPRS-TAC-93-022, 16 December 1993, pp 8-11.
- Badelt, Joachim. "Mülldeponie Ostsee: Zeitbombe Chemiewaffen", *Nordeuropa Forum*, 1993 no 4, pp 52-55.
- Bailey, Kathleen C. "The need for increased protection against chemical weapons", in Deshingkar *et al*, below, pp 59-61.
- Bailey, Kathleen C. "Problems with verifying a ban on biological weapons", *Director's Series on Proliferation* [Lawrence Livermore National Laboratory] no 3, UCRL-LR-114070-3, 5 January 1994, pp 59-63.
- Berger, Susan. "The challenges of chemical and biological weapon arms control treaty verification", in Elizabeth J Kirk, W Thomas Wander and Brian D Smith (editors), *1993 Science and International Security Anthology*, Washington, DC: American Association for the Advancement of Science, 1993, pp 175-189.
- Crone, Hugh D. "Limitations on the effectiveness of chemical protection for the person, particularly that of heat stress", in Deshingkar *et al*, below, pp 34-40.
- Dando, Malcolm. "Towards a verification protocol for the Biological Weapons Convention?", *Pacific Research* (Canberra) vol 6 no 4 (November 1993) pp 11-13.
- Deshingkar, Priyamwada, Matthew Meselson and Julian Perry Robinson (editors). *Antichemical Protection and the Chemical Weapons Convention*, Washington, DC: Committee for National Security, 1993, HSP Occasional Paper No 2, 71 pp.
- Fedorov, Lev. "[The chemical death complex]", *Rossiya* (Moscow), 1993 no 50, 8-14 December 1993 (in Russian). For an English translation see Foreign Broadcast Information Service [Washington], *JPRS Report: Arms Control* no JPRS-TAC-94-001, 18 January 1994, pp 11-15.
- Geissler, Erhard. "Towards a system of global biological security, part 1", *ASA Newsletter* no 40 (10 February 1994) pp 1 & 12-13.
- Griffiths, Derek L. "Evolution and performance of modern respirators and filters", and "Some thoughts on collective protection", in Deshingkar *et al*, above, pp 25-29.
- Hall, C Richard. "Possible developments in protective clothing", in Deshingkar *et al*, above, pp 41-43.
- Harris, Sheldon. *Factories of Death: Japanese Biological Warfare 1932-45 and the American Cover-Up*, London & New York: Routledge, 1994, 297 pp.
- Kellman, Barry; Edward A Tanzman; David S Gualtieri; and S William Grimes, *Manual for National Implementation of the Chemical Weapons Convention*, December 1993, 149 pp.
- Krosney, Herbert. *Deadly Business: Legal Deals and Outlaw Weapons, The Arming of Iran and Iraq, 1975 to the Present*, New York: Four Walls, Eight Windows, 1993.
- Lang, Winfried, and Walter Gehr. "La Convention sur les armes chimiques et le droit international", *Annuaire français de Droit international*, vol 38 (1992) pp 136-151.
- Latter, Richard. *Curbing Biological Weapons Proliferation*, London: HMSO, November 1993, Wilton Park Paper 79, 20 pp.
- Letts, Martine, Robert Mathews, Tim McCormack and Chris Moraitis. "The conclusion of the Chemical Weapons Convention: an Australian perspective", *Arms Control* [London: Frank Cass], vol 14 no 3 (December 1993) pp 311-32.
- Livingstone, Neil C. "Hidden dangers in proposed CWC", *Sea Power*, February 1994, pp 27-28
- Medema, Jan. "Realistic chemical challenge levels for design of antichemical protection", in Deshingkar *et al*, above, pp 16-22.
- Meselson, Matthew. "The role of chemical defence in chemical warfare, chemical deterrence, and chemical disarmament", in Deshingkar *et al*, above, pp 11-15.
- Neumann, Major Robert C [Chief, Doctrine Development Division, US Army Chemical School]. "Weapons of mass destruction and force protection", *Army Chemical Review*, January 1994, pp 3-8.
- Pearson, Graham S. "Biological weapons: a priority concern", *Director's Series on Proliferation* [Lawrence Livermore National Laboratory] no 3, UCRL-LR-114070-3, 5 January 1994, pp 41-57.
- Rosenberg, Barbara. "The contemporary problem of emerging diseases", *FAS Public Interest Report*, November/December 1993, pp 3-5.
- Sims, Nicholas A. "A prospect of chemical disarmament: the 1993 Chemical Weapons Convention is opened for signature", *Medicine and War* (London: Frank Cass), vol 9 no 4 (October-December 1993) pp 290-303.
- Smithson, Amy E. "Implementing the Chemical Weapons Convention", *Survival* [London: International Institute for Strategic Studies], vol 36 no 1 (Spring 1994) pp 80-95.
- Steinberg, Gerald M. "Israeli responses to the threat of chemical warfare", *Armed Forces and Society*, vol 20 no 1 (Fall 1993) pp 85-101.
- Stock, Thomas. "SIPRI's CBW project: new challenges?", *ASA Newsletter* no 40 (10 February 1994) pp 1 & 10-11.
- Tucker, Jonathan B. "Lessons of Iraq's biological warfare programme", *Arms Control* [London: Frank Cass], vol 14 no 3 (December 1993) pp 229-271.
- United Kingdom, Foreign and Commonwealth Office. "Export controls to prevent the proliferation of biological weapons", *The Genetic Engineer and Biotechnologist*, vol 13 no 4, pp 271-83, 1993.
- United States of America. *Message [to the Senate] from the President of the United States transmitting the Convention on the Prohibition...of Chemical Weapons...signed by the United States at Paris on January 13, 1993*, Washington, DC: US Government Printing Office, 1993 (Senate Treaty Doc 103-21), 451 pp.
- United States of America, Arms Control and Disarmament Agency. *Chemical Weapons Convention Update for Industry*, no 2, November 1993, 10 pp.
- United States Congress, Office of Technology Assessment. *Technologies Underlying Weapons of Mass Destruction*, OTA-BP-ISC-115 (Washington, DC: US Government Printing Office, December 1993), 263 pp.
- United States National Research Council. *Recommendations for the Disposal of Chemical Agents and Munitions* (Washington, DC: National Academy Press, 1994), 204 pp.
- Webster, Donovan. "'The soldiers moved on. The war moved on. The bombs stayed'", *The Smithsonian*, February 1994, pp 26-37 [about how France copes with the old chemical and other weapons that are continually being encountered on World War I battlefields].