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EDITORIAL: GETTING CHALLENGE RIGHT

After the decision of President Bush to forswear any use of chemical weapons once the CWC enters into force and to destroy all US chemical weapons within the ensuing ten years [see 13 May in News Chronology], one might have expected significant movement in Geneva toward completion of the Convention. In the six weeks since the President's decisions were announced, no such movement has occurred. Why not?

For one thing, the now-abandoned US positions reserving the right to retaliate in kind and to retain two percent of its chemical stockpile had almost no international support. It was therefore widely believed that they would eventually fall of their own weight, with no need for any quid pro quo from others at the Conference on Disarmament. For another, the United States now occupies so preeminent a position in world affairs that little progress can be made without its lead. It is therefore encouraging that President Bush and his CD ambassador Stephen Ledogar [see 16 May in News Chronology] have stated that specific proposals on challenge inspection will be brought to Geneva soon, presumably in time for the summer session of the CD which begins in late July.

Broad agreement on challenge inspection would certainly facilitate the resolution of other central issues facing the CD, including the verification of non-production in the chemical industry and the structure and authority of the Executive Committee. Many nations, including the Soviet Union and most members of the Western Group at the CD, support a broad scope for challenge inspection -- portrayed as "anytime, anywhere, with no right of refusal." This was the concept put forward by the United States in 1984. But recently Washington has had second thoughts. China, too, has spoken of limiting challenge rights to "relevant sites," without saying how to define what is relevant or who decides.

It is in the interest of the Convention that requests for inspection not be refused. Refusals would undermine official and public confidence in the Convention's effectiveness and would weaken its deterrent effect. These are strong reasons to try hard to find ways to

protect legitimate national secrets and proprietary information while allowing on-site inspection at any facility subject to doubts regarding compliance. Toward this end, a number of states, including Britain, France and Germany, have conducted trial challenge inspections, leading them to conclude that with suitable precautions none of their government facilities need be excluded from on-site verification. Trial challenge inspections of sensitive government facilities are also underway in the United States.

Meanwhile, representatives of the chemical trade organizations of the United States, West Europe, Japan, Canada and Australia, meeting in Geneva, have declared their support for access of CWC inspectors to all chemical production, storage and utilization facilities, with no right of refusal [see box, page 22]. This remarkable agreement from the private sector of the principal industrialized nations should serve as a spur to the chemical industry elsewhere and to governments generally to seek agreement on a broad scope for challenge inspection.

As specific negotiable proposals for settling the main outstanding problems emerge, success in Geneva will depend on the willingness of all states to relax previously unsupported positions and to enter into genuine negotiations on the hard political issues. The valid concerns of many of the less industrialized states with issues of assistance and development, for example, may be better addressed outside the Convention rather than inside, although addressed they must be. With sufficient effort and flexibility in negotiation by all, it should be possible to meet the twelve-month target date for completion of the Convention set by President Bush.

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STRENGTHENING THE BTWC REGIME: A DEFENSE VIEW

by *Graham S. Pearson*

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Background. The regime of the Biological and Toxin Weapons Convention (BTWC) should create a web of deterrence to a potential producer of biological weapons. It needs to be improved so as to address compliance concerns and to move with the times. The present provisions for verification within the BTWC are inadequate, and the shortcomings of the confidence building measures agreed to following the Second Review Conference in 1986 have been revealed in both the quantity and the content of returns made to date. The great interest shown by international experts in improving the BTWC regime is most encouraging. The important task now is to distill the many ideas into firm proposals for the Review Conference in September 1991.

For confidence building measures (CBMs) to be effective, they should be widely implemented, readily understood and focused on real enhancement of both international and national security. Unfocused confidence building measures are damaging on three grounds: 1) if some CBMs are confusing and costly to implement, States may ignore their politically binding commitment and fail to complete any CBMs; 2) irrelevant information which does not address real concerns can create a dangerous false sense of security; and 3) imprecise definitions, which leave discretion to States to decide what to declare, fail to satisfy major compliance concerns. A few *quality* CBMs will be more effective in building confidence between States Parties than will *quantities* of CBMs.

Although the four confidence building measures agreed to at the Second Review Conference represent a first step forward, it is unhelpful that only half of the States Parties who participated in the Second Review Conference have responded to the politically binding commitment to exchange information under the CBMs. Steps need to be taken to encourage all States Parties to the BTWC to respond to the agreed confidence building measures even if they have nothing to report.

The existing confidence building measures include the wording of "directly relevant to the Convention." This is, however, open to many interpretations. There must be a greater appreciation that the nature of biological warfare agents and toxins is inextricably bound up with naturally-occurring diseases. It is misleading to suggest that confidence building measures should only relate to military funding or to biological warfare defense activities, as such a definition would open a major evasion route.

In considering how to strengthen the BTWC regime, the aim should be to create an international climate of confidence about activities, whether military or civil, relating to biological agents and toxins and to create obstacles to deter any potential violator.

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Non-Governmental Organization Proposals. Proposals for the Third Review Conference of the Biological and Toxin Weapons Convention have been made by various organizations such as SIPRI and the Federation of American Scientists (FAS) Working Group on Biological and Toxin Weapons Verification. These proposals are welcomed, as the details of arms control are generally not widely appreciated outside of diplomatic, Government and specialist academic circles. Consequently the wide ranging interest being shown by the scientific community in improving the Biological and Toxin Weapons Convention can only be beneficial. It is, however, noted that the FAS Working Group does not appear to have included many persons who have been engaged in national BW defense programs; none are included in the core group of twelve, whilst only three are included in the review group of 54. While it is appreciated that the FAS has aimed at producing an independent view, it is suggested that a greater involvement of those concerned with national security and national BW defense programs would have resulted in a more sharply focused set of proposals.

Universality is an important concept in the BTWC. It is important that the financial burden of CBM implementation should not be so great as to deter participation by less wealthy nations. It is also important to appreciate that confidence needs to be built between States Parties before any State will be prepared to consider releasing information about limitations of their defense program and hence exposing potential vulnerabilities in their national security. A key requisite is to devise a means whereby all States Parties to the BTWC do contribute to these confidence building measures. It is unfortunate therefore that the proposals made by the FAS are wide ranging and appear not to have been influenced by considerations of cost-effectiveness or of national security considerations.

Nevertheless, the FAS proposals form part of an excellent basis from which to distill quality confidence building measures that are cost effective, will build confidence and enhance both national and international security. The identification of quality confidence building measures is facilitated by other contributions, such as the forthcoming monograph "The Future of Biological Weapons" [by Barend ter Haar, *Washington Paper 151*, New York: Praeger/Center for Strategic and International Studies, 1991], the many useful publications by SIPRI, the Proposed Confidence Building Measures tabled in Geneva on 9 April 1991 at a seminar sponsored by the Special Non-Government Organization (NGO) Committee for Disarmament, and those in two recent publications of the United Nations Institute for Disarmament Research (UNIDIR) [see the bibliography for full citations]. The NGO document draws together proposals for CBMs from many sources, including those of the FAS and SIPRI, and provides a

valuable distillation. As this is one which has been drafted in treaty language, it is in many respects an improvement over the original proposals. This paper considers in some detail these NGO proposals, which are listed in Table 1.

Defense Concerns. Before considering the various proposals for improved confidence building measures in detail, it is necessary to identify and expand on the national security concerns that are relevant to the BTWC. The main national security concerns are as follows. First, national BW defense programs should not be exposed in such detail as to enable potential aggressors to select BW agents for which the national BW defense programs are vulnerable. Uncertainties in the minds of the potential aggressors as to the effectiveness of BW against the protective and defense capabilities of the nations concerned will reduce the perceived utility of BW to the aggressor States. National BW defense programs should therefore address the range of potential agents so as to maximize the deterrence to any potential aggressor from using BW.

Secondly, the use of civil sector laboratories for research connected with BW defense is preferable in confidence building terms to creating a wholly in-house Government capability, shrouded in secrecy and seclusion. However, it would be a mistake to make too much information available about such civil support laboratories because of the need: 1) to minimize the potential for terrorists to acquire pathogenic materials or attack personnel at locations such as academic institutions which may be less secure than military BW defense centers; 2) to protect laboratory staff against

| BTWC Article | CBMs Proposed |
|--------------|---|
| I | <ul style="list-style-type: none"> * creation of novel agents * biologically-produced chemicals * plants, animals, humans |
| III | <ul style="list-style-type: none"> * no transfers to non-Parties for protective purposes * trade |
| IV | <ul style="list-style-type: none"> * domestic implementation |
| V | <ul style="list-style-type: none"> * defer verification/establish ad hoc meetings * establish continuing body * fact-finding by Secretary-General * regional conferences * declare all BL 4 facilities * declare all biological defense programs and facilities * declare domestic implementation * visits/expert contracts * classification/publication * proper containment/reports on disease outbreaks to WHO |

Table 1: CBMs Proposed at April 1991 NGO Seminar

Animal Rights activists or protestors against BW defense; and 3) to counter hostile intelligence service activities aimed at collecting information on the scope and state of the national BW defense program.

The aim therefore must be to devise confidence building measures which provide sufficient information about national programs relating to biological agents and toxins whether in military or civil laboratories to enable distinctions to be made between BW defense motivated activity, other military (but non-BW defense) activity and civil activity (no military involvement). Such CBMs should provide assurance of the aim of such work, whether for BW defense protective measures or to counter natural diseases, without providing excessive detail such as the nature and quantities of biological agents and toxins or the availability of vaccines which would enable a potential aggressor to select an agent or modified agent against which there is likely to be little or no defensive or protective capability.

Proposed Confidence Building Measures. It is convenient to consider the April 1991 NGO proposed CBMs (see Table 1) by considering the different Articles of the Convention in turn. Three proposals relate to Article I and seek to clarify the scope of the Convention by extending it to include all biologically-produced chemicals, by affirming that agents pathogenic to animals and plants are included as well as agents pathogenic to humans and by concluding that the creation of new biological agents and toxins with altered properties cannot be justified. It is usual at each Review Conference to reaffirm that the scope of the Biological and Toxin Weapons Convention embraces all novel biological agents and toxins however produced, and it is desirable that this reaffirmation should be an outcome of the Third Review Conference. No difficulty is seen in extending that declaration of the Third Review Conference to confirm that the Convention does apply to agents pathogenic to animals and plants as well as to humans. As to the widening of the scope to include "all biologically produced chemicals and their analogues, whatever their origin or method of production," this is more debatable as such an extension would include materials such as hydrogen cyanide. After all, as noted in the NGO proposal, the aim of the Chemical Weapons Convention being negotiated at the Conference on Disarmament in Geneva is that it will cover all non-living toxic chemicals up to and including toxins. As the BTWC already provides overlap from biological agents into the toxins, there is no clear necessity to expand the BTWC further to include "all biologically produced chemicals." Indeed, such an expansion could well result in confusion and be counter-productive in respect of confidence building measures as it could result in an increase in the number of facilities that have to be declared with little evident real benefit.

The proposals relating to article III seek to stem the proliferation of biological weapons and to encourage States to accede to the Convention. The proposal encouraging end-use and purpose certification for all material transfers that could potentially contribute to the development, production or use of biological or toxin weapons is supported. Whilst the objective of the proposal on transfer is supported, its current wording --with its prohibition of equipment intended for medical or physical protective or prophylactic use--raises doubts as to whether the proposal is acceptable on humanitarian grounds, as it would appear to inhibit the acquisition by States of the capability to protect their populations against indigenous diseases. Whilst some discrimination against non-States Parties would be helpful and the objective is supported, the issue needs further careful thought.

The proposal relating to Article IV requests States Parties to exchange information on the legal basis for domestic implementation of the Convention. This proposal is supported, although it is doubtful whether annual declarations producing large volumes of paper would be worthwhile once domestic implementation of the Convention had taken place and has been declared.

Numerous proposals are made in respect to Article V, as it is this article which is related to cooperation in solving problems and thus provides for compliance. Nine proposals have been made:

- a. Establishment of ad hoc meetings to investigate possible legally-binding measures to demonstrate compliance.
- b. Establishment of a Committee on Oversight/Implementation to oversee the functioning of the BTWC between Review Conferences.
- c. Agreement that requests may be made to the Secretary-General to conduct a timely fact-finding inquiry into compliance concerns.
- d. Encouragement of regional conferences to foster adherence to the BTWC and promote cooperation.
- e. Declaration of all facilities with maximum containment units.
- f. Declaration of all BW defense programs and facilities.
- g. Agreement that visits may be requested to any declared facility and promotion of contacts between experts.
- h. Recommendation that basic and applied research should so far as possible be unclassified and published.

i. Recommendation that WHO containment standards be observed and that open-air release of agents (other than pesticides) infectious to animals or toxic to animals and humans be prohibited.

It is convenient to consider these proposals in two groups: the first group relating to procedural activities (covering proposals b., c., d., and h.) and the second group covering confidence building measures (proposals a., e., f., g., and i.).

On procedural aspects, there will be considerable benefits if all States Parties can be encouraged to submit declarations responding to the agreed legally binding confidence building measures even if only to state that they have nothing to report. The format of the proposals put forward at the NGO seminar is welcome, as this facilitates the completion of responses by States Parties. Universal responses by States Parties could well be facilitated by the establishment of a committee on oversight/implementation to oversee the functioning of the BTWC between review conferences as the role of the UN Department of Disarmament Affairs is too limited to be able to carry out this function.

The proposal that requests may be made to the Secretary-General to conduct a timely fact-finding inquiry into compliance concerns is supported. However, the Secretary-General already has the authority to conduct an inquiry into the use of biological weapons. The difficulty with that authority is that there is no right of access to the site of the alleged use of biological weapons. There would be little advantage in extending the powers of the Secretary-General to conduct a timely fact-finding inquiry into compliance concerns unless there could be assurance of timely access. It is arguable whether it would be better to investigate whether a verification regime can be devised for the BTWC than to put effort into seeking to expand the role of the Secretary-General in fact-finding inquiries. Consideration needs to be given as to which of these two approaches is the most likely to provide unequivocal answers and be effective in deterring a State Party from considering the acquisition of a BW capability. On balance, a specific verification regime associated with the BTWC and agreed by all States Parties to provide rapid on-site inspection to address compliance concerns, perhaps utilizing the model of challenge inspection for the Chemical Weapons Convention, is considered to be more likely to be successful.

The third proposal in this group relating to the encouragement of regional conferences is supported. It is, however, suggested that it would be improved if the "other infectious or toxic threats" were replaced by "other infectious or toxic hazards" as it is understood that the aim is to prevent or remedy natural epidemics and industrial accidents. Finally, the recommendation

that basic and applied research should as far as possible be unclassified and published is supported. It should, however, be appreciated that the extent to which this recommendation will be adopted will depend on the particular circumstances prevailing in any particular State and on the extent to which compliance would infringe its national security interests.

The second group, relating to confidence building measures, starts with the proposal to establish ad hoc meetings to investigate possible legally binding measures to demonstrate compliance. This is supported as it is important that expert examination is given to whether it is possible to devise a regime which will provide an effective web of deterrence and, at the same time, enhance national and international security. A regime which purports to address compliance concerns but fails to address real concerns can create a dangerous false sense of security. It is, however, important to establish what can usefully be achieved.

The second measure in this group, proposing the declaration of all facilities with maximum containment units, is supported, together with the provision of detailed factual information. Likewise, the principle of declaration of those BW defense facilities which are largely concerned with prophylactic and protective measures against the possible hostile use of biological or toxin weapons is also supported. However, the NGO proposal as written would generate an immense amount of paperwork with little increase in confidence building. As currently worded, the NGO proposal includes protective measures such as respirators and clothing systems, necessitating the declaration of all facilities engaged in such work. Furthermore, the NGO wording seeks to require the declaration of "any facility involved to any extent." Such a requirement raises doubts from a national security viewpoint as well as from consideration that likely consequence of such a requirement would be the refusal by a number of facilities to accept Government funds for permitted work, which will tend to encourage States to carry out permitted work solely in Government facilities. The other flaw in the current wording of the NGO proposal is that it does not address programs conducted for prophylactic or protective purposes against indigenous infectious diseases which may have particular attraction to a potential aggressor as any use of such an agent would be obscured if the agent is one that occurs naturally in that region of the world. Nevertheless, the principle of declaration of national BW defense programs is supported together with other military programs concerned with infectious agents.

The proposal that requests for visits can be made to any declared facility and the promotion of contacts between experts is also supported. Finally, the recommendation that WHO containment standards be adop-

ted for the level of containment necessary for work with infectious agents and toxins is strongly supported, as it is essential that common standards be adopted by all States Parties carrying out work with biological agents and toxins. A major difficulty is that the WHO does not publish a list assigning each specific agent to a particular containment level. It will be vital to draw up a list of potential biological agents and toxins and to assign these to particular containment levels. Although this proposal is strongly supported and is basically useful, it should be recognized that high levels of containment are not essential for the production of biological agents, toxins and weapons. Finally, it is recommended that open-air release of agents (other than pesticides) infectious to animals or toxic to animals and humans be prohibited. This proposal would appear to be acceptable, although the omission of agents infectious to humans as well as to animals is surprising.

The proposals relating to annual declarations of facilities and of BW defense activities are broadly supported. However, the detail requested in Appendix I to the proposals tabled at the seminar sponsored by the Special NGO Committee for Disarmament in Geneva in April 1991 is excessive. Some are unlikely to be acceptable for organizations which have commercial activities or to be acceptable from national security considerations. Terms such as aerosol generator, production equipment, lyophilization equipment and micro-encapsulation equipment are not defined and, in the absence of such definitions, result in ambiguities and scope for confusion. It is important to have a gradual process whereby declarations become more comprehensive as confidence is built between States Parties. A balance needs to be struck between military BW defense programs, other military programs relating to infectious diseases and non-military, i.e., civil programs. Greater transparency is needed in all three areas to build confidence that States Parties are observing the spirit of the confidence building measures before a large amount of detail is requested.

Conclusions. The proposals made by the Federation of American Scientists and by others, including SIPRI and UNIDIR, and developed into those tabled at the NGO Seminar in Geneva provide a useful starting point for the Third Review Conference of the BTWC in September 1991. It is, however, vital to recognize that improvements can only be achieved step by step and that the resources needed to respond effectively to agreed confidence building measures must not be belittled. The prime requirement must therefore be to identify specific confidence building measures that will enhance confidence, improve national security and help to deter potential aggressors from acquiring BW capabilities. Against that background, it is suggested that the prime requirements for the 1991 BTWC Third Review Conference are:

- 1) To maintain the status of the BTWC as the international norm against BW through a robust Final Declaration reaffirming the importance and relevance of the treaty.
- 2) To strengthen the BTWC regime through greater participation in the effective implementation of an improved, well-focused and extended CBM regime.
- 3) To seek endorsement in the Final Declaration of the need to examine the feasibility of achieving a legally binding effective verification regime for the BTWC. To start the process, the Review Conference should mandate meetings of States Parties to explore possibilities for an effective verification regime.
- 4) To increase awareness among States Parties on the need to observe, and take action to enforce Article III of the BTWC. Consideration of the provisions of Article X, peaceful technical cooperation, will be needed as a counterbalance.
- 5) To set up a supervisory body to oversee the implementation of the CBMs and other matters relevant to the Convention.

As to specific well-focused confidence building measures, I would urge consideration of the following:

- 1) Declaration of national facilities working on an agreed list of pathogens and toxins. It is important to recognize that short lists are easy to circumvent and defeat the object of building confidence.
- 2) Declaration of national BW defense research institutions and programs. This would follow the precedent set at the Umeå Symposium in May 1990. Declarations would include organizational structure, staff numbers and disciplines, research activities and publication policy.
- 3) The adoption of measures to curb BW proliferation and so enforce Article III of the BTWC.

At some later stage consideration should be given to the declaration of the current disposition of facilities that were used for BTWC relevant activities prior to the signing of the BTWC in 1972, as this would also build confidence. Sharply focused confidence building measures such as those described above, together with a mechanism to ensure that responses are received from all States Parties, will build confidence amongst States Parties and start to make real progress down the road towards enhanced national and international security.

What follows is taken from the Sussex-Harvard rolling CBW chronology. The intervals covered in successive Bulletins have a one-month overlap in order to accommodate late-received information. The basic chronology, which is continuously updated, is fuller and provides complete citations of sources. For access to it, apply to Julian Perry Robinson at the Science Policy Research Unit, University of Sussex, Brighton, BN1 9RF, England.

2 February Front-line British forces in Saudi Arabia are being encouraged to take inoculation against plague, both because of indications that Iraq may use it as a BW weapon and because the disease is now rife in Kuwait City, so it is reported in today's *Daily Telegraph*. {DTel 2 Feb}

3 February In Iraq, President Saddam Hussein has authorized front-line commanders to use CW weapons, so it is reported in today's London *Sunday Times*, which says that forces had been warned accordingly during the previous week. {ST 3 Feb}

3 February In Riyadh, Colonel Ahmad al-Rubay'an, spokesman for the Joint Forces Operations Theater Command, says that, of 429 Iraqi prisoners just captured after the engagement at al-Khafji, 304 were carrying gas masks. {Saudi Arabian television 3 Feb in FBIS-NES 4 Feb}

3 February An unidentified Iraqi engineer, speaking in Jordan, is quoted in the German press as saying that "technical problems" continue to prevent Iraq from fitting its Scud missiles with CW warheads, but that a solution is being sought "feverishly" {IHT 4 Feb}. The "technical difficulties concern the 'relative inaccuracy of the Scud missiles,' the Iraqi engineer stressed," says the *Frankfurter Allgemeine Zeitung*, continuing: "The Scud attacks on Israel [see 18 Jan] have shown that there is a 'large deviation' between the target and the object that was hit. However, this must not happen in the event of a poison gas attack, because such an attack must not hit Jordan. It is difficult to attach a heavy gas container to a warhead without causing a ballistic deviation. In addition, there are also problems in the area of electronics about which he did not elaborate" {FAZ 4 Feb in FBIS-NES 5 Feb}.

3 February French military spokesmen say that the bombing of Iraq's CW potential has caused the release of a toxic cloud {French domestic radio 3 Feb in FBIS-WEU 4 Feb}. Nerve gas, but not mustard gas, has been detected in trace quantities "almost everywhere" [see also 30 Jan] {AFP 3 Feb in FBIS-WEU 4 Feb; DTel 4 Feb}. A US military spokesman next day says that air attacks on CW targets had been carried out in such a way as to minimize, if not eliminate, the release of toxic substances {IHT 5 Feb}.

4 February In Brussels the European-Community governments agree, at the request of France, to send gas masks to Palestinians in the Israeli-occupied territories [see also 24 Jan]. {IHT 6 Feb}

4 February US Defense Secretary Cheney submits his department's FY 1992-93 two-year budget to the Congress. For CBW programs the request includes \$638.2 million in FY 1992 and \$604.1 million in FY 1993 for CBW defense, and \$475 million in FY 1992 and \$627 million in FY 1993 for chemdemil procurement. {House Armed Services Committee data, 16 April}

The new budget does not include Operation Desert Storm spending, which is to be handled in a separate supplemental budget request.

5 February Australia furnishes the CD with a lengthy paper on *Strategy for Preparing for the Implementation of the Chemical Weapons*

Convention in Australia. The strategy described in the paper had been finalized by the Australian Government in October, after consultations. The paper serves to illustrate the fact that there is a wide range of tasks that must be undertaken or initiated ahead of time by any government if it is to be able to commit its country in good faith to the CWC when it is ready.

The paper also serves to place the matter of national export controls before the CD, for appended to it is a list of the 50 CW-agent precursors that are subject to Australian export controls. The list draws attention to chemicals on it which are not included in Schedules 1, 2A or 3 of the CWC rolling text, suggesting that one of them -- *tris*-ethanolamine -- be added to Schedule 3; three other such suggested additions -- ethyl-*bis*-ethanolamine, methyl-*bis*-ethanolamine and thiophosphoryl chloride -- are proposed elsewhere in the paper. {CD/1055}

6 February The Libyan foreign ministry denies allegations made the day previously on German television that a large underground storage facility for nuclear and chemical weapons is being built 40 km from Tripoli. {JANA 6 Feb in FBIS-NES 8 Feb; UPI as in CN 8 Feb}

6 February In Bonn, the Chancellor's cabinet approves proposals that would increase penalties for violations of German export-control laws and of the UN sanctions against Iraq; the proposals would also give new powers to German customs and security agencies, including rights to tap telephones and intercept mail, and the Federal Intelligence Service would be required to provide prosecutors with information gained from its own mail intercepts {DPA in FBIS-WEU 6 Feb; IHT 7 Feb}. Parliament is expected to approve the proposals because of public outrage over German industrial involvement in Iraqi armament, of which new disclosures continue to surface in the media.

Stern magazine reports the involvement of a Thyssen AG subsidiary, and eight German subcontractors, in construction of the CBW facility near Salman Pak [see 23 Jan] {*Stern* 7 Feb}. Thyssen denies delivering poison-gas laboratory equipment, as alleged, but says that during 1981-82 it had supplied equipment for the laboratory's central heating, fire protection, energy supply and telephone system {FT 21 Feb}.

Die Welt reports preliminary findings from a Customs investigation into the more than 135 German companies listed by US Congressional staffers and others as suppliers to Iraq of technologies for unconventional weapons. {*Die Welt* 11 Feb}

6 February In Washington, unidentified "Bush administration sources" say that Iraq, during the previous week, had moved a special chemical weapons brigade into southern Kuwait, the brigade having with it multiple rocket launchers and FROG-7 heavy artillery rockets armed with CBW warheads. An intelligence assessment reportedly was that the warheads most probably contained sarin, anthrax spores or dusty mustard. {WT 7 Feb}

Two weeks later, however, an unidentified military official is quoted as saying: "There is a [chemical-weapons] regiment or brigade-size unit out there somewhere and we just don't know where it is." {NYT 22 Feb}

6 February President Bush signs into US public law legislation (H.R.556) compensating Vietnam-War veterans suffering from exposure to Agent Orange [see 30 Jan]. The law permanently extends disability benefits to veterans suffering from two types of cancer presumed to have been caused by the CW agent, and to those who developed chloracne within a year of their service in the war. The National Academy of Sciences is empowered to review the scientific evidence and report within 18 months on the nature and quality of any evidence linking herbicide exposure to each of the diseases for which such an association is suspected. {CR 30 Jan; SFC 7 Feb}

6-8 February In the Netherlands, experts from 17 countries meet for a closed technical seminar to prepare the ground for the third review conference of the Biological Weapons Convention. The meeting is opened by Netherlands Foreign Minister Hans van den Broek {Reuter 6 Feb}. A Canadian government publication subsequently describes the meeting thus: "The conference was ... a 'brainstorming' session, in which participants put aside official positions to remain receptive to new ideas that might provide the basis for further policy development in the run-up to the Review Conference. The unstated assumption of all present was that opportunity exists to strengthen the BTWC from within -- that is, not through the potentially divisive procedure of treaty amendments but through expanding existing provisions or adding, through agreed protocols or politically binding declarations, further commitments to transparency and confidence-building." {*The Disarmament Bulletin* no. 16}

7 February The Israeli Defense Forces say that about 10,000 gas masks have by now been distributed to Palestinians living in the Occupied Territories [see 14 Jan and 4 Feb]. UNWRA has distributed a further 10,000. {Ind 8 Feb}

7 February In Angola, government aircraft drop chemical bombs on several villages in the northeastern province of Luanda, "killing many people and causing devastation to agricultural production centers," according to the UNITA news agency, which adds: "Some of the people affected by the chemical bombs are said to be losing their hair, besides other ailments" [see also 5-6 Dec 90]. {KUP 7 Feb in BBC-SWB 8 Feb}

7 February The Moscow weekly *Megapolis Express* publishes an article about the problems confronting the Soviet chemdemil program in which the author, Major-General Professor Igor B Yevstafey [see 26 Nov 90], complains about the USSR Ministry of Defense being expected to bear the burden of the program unaided. He

writes: "It is hard to understand the echelons that assign to the Army the task of destroying weapons, be this the destruction of missiles, tanks or chemical weapons. This is tantamount to a doctor being made to kill people rather than cure them, making a builder destroy homes and bridges, or making a peasant plough under the harvest he has grown. The sacred duty of servicemen is to love their weapons, preserve them and keep them continuously ready to accomplish the tasks of ensuring the defense capability of the country." He addresses the possibilities for converting CW agents into useful products rather than simply destroying them, and closes: "It is becoming clear that superficially spectacular political decisions in the sphere of disarmament call for corresponding legislative and organizational economic measures, as well as outlays going into billions. If the USSR Supreme Soviet approves the agreement signed [by Presidents Gorbachev and Bush, on 1 June 1990 -- the bilateral US-Soviet CW destruction agreement], these measures will have to be implemented against the background of the current sociopolitical and economic problems of our state." {*Megapolis Express* 7 Feb in JPRS-UMA 3 May}

7 February In Romania, Prime Minister Petre Roman tells parliament that he plans to send a field hospital and an anti-CW decontamination unit to Saudi Arabia, as requested by Saudi Arabia and by Britain. {NYT 8 Feb}

7 February In France, President Mitterrand, when asked on television about the likely coalition response to any Iraqi use of CW weapons, says: "We must not use chemical weapons. We have weapons, conventional weapons, which will allow us to uphold the law in this conflict and make it prevail, but we must not succumb to this wish for a riposte in kind. There is a desire to lead us to that, but we must refuse" [see also 31 Jan] {*Antenne-2* television 7 Feb in FBIS-WEU 8 Feb}. Conservative opposition parties subsequently criticize him for needlessly abandoning, as they put it, a psychological weapon of deterrence {*Le Monde* 10-11 Feb in FBIS-WEU 13 Feb; FT 13 Feb}

7 February In Geneva the CD is once again in a state of disagreement about whether the new mandate for its Ad Hoc Committee on Chemical Weapons should or should not make reference to a total prohibition of the use of the weapons, the Group of 21 favoring the reference, the Western Group as usual opposing. {CD/1046}

The CD does, however, formally adopt the final report of its last Ad Hoc Committee on Chemical Weapons [see 18 Jan], Appendix I of which provides a new Rolling Text {CD/PV.581}. Substantial

GLOSSARY OF ABBREVIATIONS FOR NEWS CHRONOLOGY

| | | | | | |
|---------|--|------|--|------|--|
| ACR | <i>Arms Control Reporter</i> | DN | <i>Defense News</i> | JDW | <i>Jane's Defence Weekly</i> |
| AN | <i>Atlantic News</i> | DPA | Deutsche Presse Agentur | JPRS | Joint Publications Research Service (Washington) |
| BBC-SWB | BBC-Summary of World Broadcasts | DTel | <i>Daily Telegraph</i> (London) | KZ | <i>Krasnaya Zvezda</i> |
| CBW | Chemical/biological warfare | DW | <i>Defense Week</i> | MN | <i>Moscow News</i> |
| CD | Conference on Disarmament | FAZ | <i>Frankfurter Allgemeine Zeitung</i> | NYT | <i>New York Times</i> |
| CD/ | CD document | FBIS | Foreign Broadcast Information Service (Washington) | Obs | <i>Observer</i> (London) |
| C&EN | <i>Chemical & Engineering News</i> | FedR | <i>Federal Register</i> (Washington) | S/ | UN Security Council document |
| CN | <i>Current News Early Bird</i> | FR | <i>Frankfurter Rundschau</i> | SFC | <i>San Francisco Chronicle</i> |
| CNA | Chinese News Agency (Taipei) | FT | <i>Financial Times</i> (London) | SFE | <i>San Francisco Examiner</i> |
| CQ | <i>Congressional Quarterly</i> (Weekly Report) | G | <i>Guardian</i> (London) | ST | <i>Sunday Times</i> (London) |
| CR | <i>Congressional Record</i> | IHT | <i>International Herald Tribune</i> | TL | <i>Times</i> (London) |
| CW | Chemical warfare | Ind | <i>Independent</i> (London) | Tag | <i>Tageszeitung</i> (West Berlin) |
| DD | <i>Defense Daily</i> | ITA | <i>Inside the Army</i> | STel | <i>Sunday Telegraph</i> (London) |
| DerS | <i>Der Spiegel</i> | ITP | <i>Inside the Pentagon</i> | WP | <i>Washington Post</i> |
| DFAW | <i>Defense & Foreign Affairs Weekly</i> | JANA | Jamahiriyyah News Agency (Tripoli) | WT | <i>Washington Times</i> |
| | | | | WSJ | <i>Wall Street Journal</i> |

advances in the draft CWC since the last Rolling Text [see 21 Aug] include: a provision in Article VII requiring states parties to enact penal legislation in implementation of their obligations under the treaty; further development of the provisions for amending the treaty so as to facilitate updatings of the chemical control schedules; the inclusion of language on sanctions; a general tidying-up of the Annexes (including the specification of two new sulphur mustards in Schedule 1); and some refinements in the Protocol on Inspection Procedures.

When introducing the report a week previously, the chairman of the committee, Ambassador Hyldenius of Sweden, had also noted the concerted efforts which, during his incumbency, had been put into the "major political hard-core issues" and which might soon be expected to bear fruit. He drew attention here, particularly, to his summary of the consultations on undiminished security and universal adherence presented in Appendix II of the final report, and observed, also, that although agreement had not after all been reached on challenge inspection, the national trials that had been conducted will place the CD "in a better position than before to resolve this issue." {CD/PV.580}

Other notable Appendix-II items are papers on "Low concentrations" and "Captive use of listed chemicals," which put forward suggestions on how to accommodate certain specific technical concerns that had been raised by chemical-industry representatives, and a paper on "Financial aspects of the Organization," which sets out a range of options for funding the treaty. {CD/1046}

7 February Attending today's plenary session of the CD, as a guest of the US delegation, is Congressman Wayne Owens, who is announced by Ambassador Ledogar as "one of four Congressmen appointed by the Speaker of the House, Mr Thomas Foley, as a special observer for the chemical weapons negotiations." {CD/PV.581}

7 February The United States and the Soviet Union conclude their 17th round of bilateral CW talks in Geneva [see 15 Jan]. {ACR no. 3-91 at 704.B.467}

7 February US Secretary of State James Baker testifies to the Congress that the Bush administration intends to "redouble" its efforts in Geneva to secure a "treaty banning chemical weapons entirely." {Arms Control Today March}

7-8 February In the UK, National Opinion Polls ask 1010 people representative of the population of Great Britain how the allies should respond if Iraq resorts to chemical weapons. Two percent favor withdrawal or ceasefire; 9 percent don't know; 11 percent, retaliation in kind; 14 percent, the use of battlefield nuclear weapons; 29 percent, a conventional response; and 35 percent, the devastation of Baghdad with B-52 bombers. {ST 10 Feb}

8 February Iraq asks the United Nations to dispatch a fact-finding mission to determine whether the factory in Baghdad whose bombing two weeks previously had been reported by CNN [see 23 Jan] produced children's milk or biological weapons. {Baghdad radio 9 Feb in FBIS-NES 11 Feb; IHT 9-10 Feb}

8 February Germany and the United Kingdom furnish the CD with a joint report on two joint practice challenge inspections conducted the previous summer, one at an air force operational base in Germany, the other at an ammunition storage facility in the UK. The report describes the procedures and concepts that were tested, including 'managed access' techniques, and includes detailed inspection reports as prepared by the inspectors. It concludes that the joint exercises have "served to reaffirm to both countries the value of the concept of challenge inspection as an effective means of de-

termining circumvention of the Chemical Weapons Convention." {CD/1056}

8 February From Canada, Prime Minister Brian Mulroney and External-Affairs Secretary Joe Clark propose that there should be a World Summit on the Instruments of War and Weapons of Mass Destruction: a gathering of world leaders under UN auspices to endorse a comprehensive program of action.

External Affairs and International Trade Canada later states that among the goals it would wish to see included in the program would be: "a solemn commitment" by countries to conclude a comprehensive global chemical weapons convention by the end of 1992; "expansion of the Australia Group's membership and the enhanced enforcement of national controls on the export of chemicals that could be used in the production of chemical weapons"; and "agreement of signatories [of the BWC] to convene a specially mandated conference in 1993 to negotiate verification provisions for the Convention." {The Disarmament Bulletin no. 16}

11 February In Moscow, a senior foreign-policy adviser to President Gorbachev announces, as the President's personal envoy Yevgeny Primakov leaves for Baghdad, that the Soviet Union is calling on both sides in the Gulf war formally to renounce the use of any chemical, biological or nuclear weapons. {FT 12 Feb}

11 February In Riyadh, US CENTCOM spokesman Brigadier Richard Neal (Marine Corps) says that targets attacked in Basra have included both chemical-weapons plants and chemical-weapons storage facilities, and that targeting experts had selected special bombs for the purpose so as to ensure, as he puts it, minimum impact on the environment. {IHT 12 Feb}

At the Pentagon press briefing, the Joint Staff Director of Operations, Lt-Gen Thomas Kelly, says: "There is very, very, very little NBC production going on in that country--it ranges from zero to maybe ten percent of what they had before the war" {transcript of Pentagon briefing, 11 Feb}. Several days later, General Kelly says that some of Iraq's chemical weapons may have lost their potency over the previous four weeks because of Iraqi manufacturing technology yielding an unstable product. He says, further, that the remaining threat of Iraqi CW is "nowhere near as significant as it was at the outset" {WP 19 Feb}.

11 February Iraqi troops may have sown landmines filled with nerve and mustard gases in parts of southern Kuwait, according to an unidentified US military official widely quoted in the press. {IHT & TL 12 Feb; Pravda 15 Feb in FBIS-SOV 22 Feb; DFAW 18-24 Feb}

13 February The US General Accounting Office issues a report on the now-completed withdrawal of US CW weapons from Germany [see 6 Nov 90]. The operation had cost about \$62 million, more than 10 percent of which had been paid by Germany. {GAO/NSIAD-91-105; ITP 21 Feb}

13-15 February In the United States, a team of 15 Soviet experts, led by Nikita Petrovich Smidovich of the USSR Ministry of Foreign Affairs, visits a DuPont phosgene facility in Deepwater, New Jersey, and then the mothballed sarin-precursor (dichlor) production facility at Muscle Shoals, Alabama, under Phase I of the 1989 Wyoming Memorandum of Understanding {Huntsville Times 30 Jan, Florence Times Daily & Decatur Daily 15 Feb, Times Daily Alabama 16 Feb.}

On 20 February the team visits the chemical-weapons storage facility on Johnston Atoll in the Pacific. {US Army Pacific, Public Affairs Office press release, 13 Feb; Star Bulletin (Honolulu) 22 Feb}

14 February Iranian Foreign Minister Velayati, addressing the CD in Geneva, says: "It is even more alarming that not only threats exist

of the possible use of chemical weapons [in the Kuwait war], but there is even reference to a possible resort to nuclear arms. Aside from an immediate need to prevent such a disastrous situation in this conflict, one is now more inclined to insist, for the long term, that any commitment regarding weapons of mass destruction ought to be comprehensive and include chemical weapons and nuclear weapons as well as sophisticated conventional weaponry. With regard to nuclear weapons, one could now conclude that accession to the non-proliferation Treaty by all States seems a necessary requirement.

"The draft convention on chemical weapons should also be freed of any discriminatory provisions. It should enhance the security of all nations. Ideas such as the retention of chemical weapon stocks, whatever the pretext, will give the impression of the military utility of such weapons and will be detrimental to our common cause.

"Furthermore, universality is the keyword for our work in this regard. The incentives for joining the convention and disincentives for those who remain outside will play a determining role in this respect. Since underdevelopment poses a threat to the security of developing countries, any provision which may harm the legitimate development of civil chemical industry should be prevented.

"But still, the most significant task to be tackled in order to ensure universality and prepare suitable ground whereby States would find it safe and secure to join the convention is to maintain a balance at the global, and more importantly at the regional level for the security of states. The fact that the chemical weapons convention would generally enhance the security of States remains valid, but this cannot be sufficient when one comes to the actual point of making a decision to join this convention. For each country national security reigns supreme. Every State will wish to have enough assurances that its security will not be diminished through joining the convention. I must add that this is particularly relevant in regions which are hotbeds of tension and where chemical weapons have already been used." {CD/PV.582}

14 February Sweden introduces into the CD at plenary level the proposal for a new nonproduction-verification scheme which it had circulated for consultations during the intersessional meetings. The core of the proposal is its concept of 'capable plant sites': States Parties would be obliged under the proposal to declare all such sites regardless of whether scheduled chemicals are actually produced there. The proposal differentiates itself from the current provisions (in draft Article VI) for civil-industry controls in the following terms: "processing and consumption of chemicals listed on Schedules 2 and 3 are not subjected to verification measures; no facility agreements will be required; a Schedule 4 for chemical conversion processes is established; selective on-site inspections on short notice will replace systematic routine on-site inspections; on-site inspections can take place at facilities producing Schedule 3 chemicals; on-site inspections can take place at facilities capable of producing listed chemicals, the capability being indicated by the use of certain chemical conversion processes; by using declarations on planned activities as a basis for the verification the inspections can be focused on ongoing activities instead of on past activities; the total verification effort in terms of on-site inspection can readily be adjusted to be commensurate with the resources available at the Technical Secretariat; [and] objects for inspections may be proposed by States Parties in a non-confrontational way, thus maximizing the cost-effectiveness of the inspection effort without introducing accusations" {CD/1053}.

14 February Australia announces at the CD that it "intends to host a workshop for regional chemists in Melbourne in the middle of this year with the aim of providing the necessary background and training to those technical advisers in government who will be required to complete declarations and assemble technical data." Plans are

to hold a multilateral trial inspection of a Melbourne chemical plant in association with the Workshop.

Australia proposes in the CD plenum that each unattributed footnote in the rolling text, of which there are a great many, entering disclaimers, qualifications, reservations, etc, be deleted unless the delegation responsible expressly lays claim to it.

Australia also proposes that the provisions of the treaty relating to destruction of CW weapons ensure a clear commitment to environmentally safe procedures. {CD/PV.582}

14 February The CD re-establishes its Ad Hoc Committee on Chemical Weapons for its 1991 session on the same mandate as in 1990 [see 7 Feb] {CD/PV.582; CD/1058}. The chair of the committee, Serguei Batsanov of the USSR [see 21 Aug 90], establishes three working groups: (A), on security issues, chaired by Iran; (B), on verification issues, chaired by Poland; and (C), on organizational and financial issues, chaired by Italy. He also entrusts certain specific consultations to individual 'friends of the chair.'

14 February The head of the USSR CD delegation, Serguei Batsanov, who is today formally elected chairman of the CD Ad Hoc Committee on Chemical Weapons, speaks to the press of the breakthrough in the CWC negotiation which he must now seek: "A qualitative breakthrough means the achievement of true security of states," adding that this calls for the complete destruction of chemical weapons, the full prohibition of CW use, and inspection on request. He says he also wants "to make active efforts" on assistance in protecting future States Parties who have no CW weapons against such weapons. He sees the Gulf war as somewhat decelerating the activities of delegations, but observes: "It seems to me that top-level efforts to ban chemical weapons worldwide should blend well with the new security structures which will emerge after the end of the war." {TASS 14 Feb in FBIS-SOV 15 Feb}

14 February Today is the due date in Washington for the issue of new export-control regulations in implementation of the administration's Enhanced Proliferation Control Initiative [see 13 Dec 90]: regulations that are to require licenses before certain items of dual-purpose technology potentially applicable in the manufacture of CBW weapons may be exported to "countries of concern" [see 21 Dec 90]. A dispute between the Departments of State and Commerce over the specification of those countries is later reported to be delaying the issue {IHT 28 Feb, NYT 6 Mar}.

The *New York Times* quotes an unidentified "senior Administration official" as saying that the State Department "originally wanted to restrict the list to nations known to support terrorists, like Libya, Iraq, Syria and North Korea, while the Commerce Department preferred a broader list, including Egypt and Israel." The report continues: "In an effort to reach a compromise, the State Department proposed to list two regions -- Southwest Asia and the Middle East -- instead of countries. But the Commerce Department argued that the regional designations would cost American exporters time and produce unnecessary bureaucracy while they would leave out several potential chemical weapon producers like Argentina, Brazil, Ethiopia, Taiwan and Myanmar. ... Officials of the two departments [eventually] agreed to a list that includes 14 countries, including Israel, Egypt, Saudi Arabia, India and Pakistan." This list now awaited Secretary Baker's approval. {NYT 6 Mar}

15 February President Bush transmits to the US Congress his administration's latest annual report on *Soviet Noncompliance with Arms Control Agreements*. On CBW, the report reaffirms what is said in earlier reports [see 23 Feb 90], notably the US determination that the USSR has maintained an offensive BW capability in violation of the BWC.

Regarding the controversial Yellow Rain allegations, the Presi-

dent's report states that: "The issue of whether the Soviet Union has violated the 1925 Geneva Protocol and related rules of customary international law and the 1972 Biological Weapons Convention by its involvement in the production, transfer, and use of lethal and incapacitating chemical and biological agents, including trichothecene mycotoxins, for hostile purposes has been addressed in previous reports, most recently in December 1987. In that report the United States found no basis for amending the previous conclusion that the Soviet Union has been involved in the production, transfer, and use of trichothecene mycotoxins for hostile purpose in Laos, Cambodia, and Afghanistan in violation of its legal obligations under international law as codified in the Geneva Protocol of 1925 and the Biological Weapons Convention of 1972."

Referring to the 29 December 1989 (confidential) bilateral exchange of chemical-weapons data in furtherance of the Wyoming Memorandum of Understanding, the report says that "the Soviet Union declared seven storage depots: five for munitions and two for bulk agent."

17 February Brazil and Argentina are close to finalizing the draft of a treaty forbidding the production and use of CBW weapons, so Brazilian Foreign Minister Francisco Rezek is today reported, continuing: "There is no reason to wait for a treaty to be drafted abroad because we know very well what we want." He says, further, that he believes Chile, Paraguay and Uruguay will "probably" also sign the treaty, which he expects to be finished in the next few months. {*Folha de Sao Paulo* 17 Feb in FBIS-LAT 20 Feb}

18 February In Washington, during the annual meeting of the American Association for the Advancement of Science, there is a panel on 'Chemical and Biological Weapons: Elimination or Proliferation?' {SFC 19 Feb, C&EN 25 Feb}

Speaking during the discussion, USSR Embassy official Igor Khripunov says that the USSR Supreme Soviet has been asked to approve construction of two chemdemil plants, one at Kambarka [see 3 Nov 90], a former CW-weapons production site, where Soviet-developed neutralization technology will probably be used. The other plant will also be in Russia, at a site yet to be specified, and may use JACADS-type incineration technology [see also 7 Feb]. {C&EN 25 Feb}

19 February Austria submits to the CD three studies prepared by members of the Austrian Scientific Council for CW-verification. One of the studies seeks lessons for the CWC from the control regimes established by the 1988 UN Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances. The other two describe a computer program for verifying financial and material records, the program itself being made available on diskette to CD delegations. {CD/1062}.

20 February Hungarian Foreign Minister Jeszenszky, addressing the CD in Geneva, speaks in support of the idea of a ministerial session of the conference aimed at finalizing the CWC {CD/PV.583}. He also introduces a paper updating last year's declaration of Hungarian production and consumption of scheduled chemicals [see 19 Feb 90] {CD/1061}.

20 February Unidentified US and allied Arab officials, including a "senior Bush administration official involved in the final preparations for a ground war," reportedly say that any significant Iraqi resort to CW against coalition troops would lead to a major escalation of the war and could trigger a contingency plan for a march on Baghdad to hunt down Saddam Hussein. Leaflets being dropped on Iraqi lines warn that anyone using chemical weapons may subsequently face trial as a war criminal. These developments are said to result from a US assessment that Iraq is now virtually certain to use CW

weapons against attacking forces. Unidentified officials are quoted as saying that Saddam Hussein has already given troops dug-in in Southern Kuwait the authority to use chemicals against any allied assault [see also 3 Feb] {LAT 21 Feb}. Intercepted radio messages are later cited as evidence of this authorization {STel 3 Mar}.

20 February The US Senate, now with White House concurrence, passes legislation re-authorizing the Export Administration Act which lapsed when President Bush pocket-vetoed [see 16 Nov 90] follow-on legislation, the 'Export Facilitation Act of 1990,' that would have restructured US export controls, especially those associated with Co-Com, and -- the cause of the veto -- required him to impose sanctions on countries developing or using CBW weapons and companies aiding in the development of those weapons. US export controls have in the meanwhile been running under presidential authority, including the Executive Order issued at the time of the veto which mandated CBW-counterproliferation sanctions -- non-automatic, but otherwise similar to those envisaged in the vetoed legislation -- but which, as regards expanded export controls [see 13 Dec 90], has still to be implemented [see 14 Feb].

The new bill closely follows the vetoed legislation, calling for automatic and mandatory sanctions in the case of CBW weapons being used. What the Senate adopts is an amendment to the original bill [see 31 Jan], which, rather than allowing the president to waive sanctions if he thought the national interest so required (as the White House had previously insisted [see 16 Nov 90]), would allow him to delay the imposition of sanctions against companies aiding proliferation pending the action of their own governments against them {NYT 22 Feb, CQ 23 Feb}. The House of Representatives is expected to take up similar legislation early in March {ITP 28 Feb}.

21 February In Poland, *Gazeta Wyborcza* reports that the commander of Soviet forces in Poland has refused to allow trial inspections under the projected CWC to be conducted at Soviet bases in the country. {Ind & *Philadelphia Inquirer* 22 Feb}

21 February Bulgarian President Zhelyu Zhelev, visiting the grave of Georgi Markov in England, promises a thorough investigation of the latter's assassination in 1978, hinting that British security services have been asked to assist the investigation [see also 17 Feb 90]. {Ind 22 Feb}

21 February In Sweden the government authorizes procurement of gas masks and protective jackets in sufficient quantity to bring, by Spring 1994, the total available supplies up to a level sufficient for the entire population. The jackets are for protecting infants. {*Dagens Nyheter* 22 Feb in FBIS-WEU 4 Apr}.

21 February British defense officials say that, in the past few days, Iraq has moved nerve- and mustard-gas munitions to front-line artillery and multiple-rocket-launcher units in Kuwait and southern Iraq [see also 6 Feb], and that Iraq is now believed able to fire CW warheads on Scud missiles {DTel & FT 22 Feb}. The latter is being said by Israeli authorities, too {*Yediot Aharonot* 20 Feb in G 21 Feb; DTel 22 Feb}.

British military press-briefers the day previously had been implying that interrogation of Iraqi soldiers captured by infiltration teams of the Special Air Service had convinced intelligence officers that Iraq would use chemical weapons, delivered by artillery, against a coalition ground offensive. {G 21 Feb}

21 February New Zealand, when presenting to the CD the report {CD/1057} on its national trial inspection [see 7 Nov 90] and the conclusions it had drawn therefrom, declares that its aim is to have the necessary legislation in place so that, when the CWC is completed, it can become an original signatory {CD/PV.584}.

21 February France distributes to the CD a report on a second practice challenge inspection [see 8 Aug 90], which had been conducted on 6 December "at an air base which is highly sensitive from the standpoint of national security." {CD/1063}

22 February On Moscow television, the chief of Combat Training of the USSR Ministry of Defense Chemical Troops, V I Buktoyarov, speaks of a reorientation of the chemical defense schools, such as the Kostroma Chemical Defense Higher Military Command School which is now in its 26th year, saying: "the schools are changing to new combat training plans and programs as from 1991/1992. These programs incorporate ecological and environmental protection issues. There will be many jobs for our chemical expert graduates in the national economy in peacetime too." {Utro 120+30 22 Feb in FBIS-SOV 26 Feb}

22 February The US Defense Department, as part of its \$15 billion "Operation Desert Storm" supplemental budget request [see 4 Feb], seeks an extra \$349 million for procurement of anti-CW personal protective gear "consisting of protective overgarments, gloves with inserts, overboots, hoods and filter canisters, cooling vests, chemical agent detection kits, personal skin decontamination kits and spare parts for protective masks." {DW 26 Feb}

22-26 February In Cambodia, government forces use chemical poisons during fighting in Battambang province, according to a Democratic Kampuchean source. {Voice of Democratic Kampuchea 5 Mar in FBIS-EAS 6 Mar}

24 February Coalition forces, before dawn, in anti-CW protective gear {Reuter as in CN 25 Feb}, commence a large-scale multi-pronged ground offensive into Iraq and Kuwait which soon encircles the 42 Iraqi divisions in the theater of operations and initiates their destruction or rout.

The 2nd US Marine division reports encountering CW agents when one of its bulldozers sets off a chemical mine, so General Schwarzkopf is quoted as saying at a press briefing {FT 25 Feb; Reuter as in CN 25 Feb}. But he also says: "We've had some initial reports of chemical-biological weapons, chemical weapons, but those reports to date as far as we're concerned have been bogus. There have been no reported chemical weapons used" {NYT 25 Feb}.

25 February In Tunis, the chairman of the Palestine Liberation Organization, Yassir Arafat, says during a radio interview that the use of napalm by coalition forces in the Gulf justifies Iraqi use of chemical weapons in retaliation. {FT 26 Feb}

26 February In the Netherlands, a state prosecutor confirms that Eldi Chemicals of Krimpen is under investigation on suspicion of having exported some 65 tons of chemicals to Britain destined for production of CW agents in Iran. {FAZ 27 Feb}

26 February In London, defense officials say that all Iraq's storage bunkers for CBW weapons have by now been destroyed, as have production facilities. The whereabouts of any front-line stocks of chemical weapons in Kuwait, however, have not yet been identified. {FT 27 Feb}

Two days later, London officials say that British troops had discovered Iraqi chemical mines on the Gulf battlefield [see also 24 Feb]. {Ind 1 Mar}

26 February In Riyadh, US spokesman Brigadier Richard Neal says that, despite the dire situation of Iraqi forces facing the coalition ground offensive, there were no reports of chemical weapons being used. "I don't have an explanation of why they haven't used chemi-

cals during the retreat." {Ind 27 Feb}

General Schwarzkopf next day says at a briefing: "I don't know the answer. I just thank God that they didn't." But he speculates that maybe it was because the principal remaining Iraqi delivery system for CW agents, namely artillery, had effectively been destroyed. He speaks of other explanations he has heard: that the Iraqi chemical-weapon stock had degraded in the desert [see also 11 Feb] and could not be upgraded because the production facilities had been destroyed; and that the Iraqis might have feared nuclear retaliation. {Ind, NYT & WP 28 Feb}

What might have been meant by this reference to stocks having degraded is later suggested by reporting in the *Baltimore Sun*: "Some of the coalition's first [air strike] targets are believed to have been a research complex for non-conventional weapons at Salman Pak and the main factory for chemical munitions at Samarra. On February 10 ... Defense Secretary Dick Cheney said production facilities were 'for the most part, destroyed.' He said air strikes had done 'good work' in destroying storage facilities, but warned 'clearly [Saddam Hussein] retains significant chemical weapons.' Undisclosed at the time were chronic production problems at the factories, US officers say. Iraq had encountered difficulties removing impurities from its poison gas. The impurities limited how long chemical munitions could remain effective, making it important that they be used shortly after they were filled. Once the factories were destroyed, Iraq could not easily refill the chemical rounds in stock and could not depend on the effectiveness of the rounds once they were fired, US officers say, noting that the initial air strikes clearly had caught Iraq by surprise." {*Baltimore Sun* 5 Mar}

27 February On Johnston Atoll, Phase I of the JACADS Operation Verification Test [see 30 Jun 90] -- the chemdemil of 7500 GB-filled M55 rockets -- is successfully concluded. {Prepared testimony of Susan Livingstone (Asst. Sec. of the Army) before a Senate Armed Services Subcommittee, 13 Jun}

28 February Kuwait City is finally cleared of Iraqi forces. The coalition offensive is suspended at 0500 hrs GMT.

28 February Israeli Foreign Ministry officials tell reporters that Israel is demanding that Iraq be banned from possessing missiles or non-conventional weapons, and that it be forced to declare its intention to make peace with Israel, before the international sanctions against Iraq are lifted. Further, international inspections should be used to enforce the ban on Iraqi missiles and nuclear, biological and chemical weapons. A text of these demands is being sent to the US Secretary of State and to other Western leaders. {WP 1 Mar}

28 February UK Prime Minister John Major speaks in the House of Commons of the conditions which Iraq must satisfy before allied forces relinquish control of southern Iraq and economic sanctions are lifted. He says that the conditions should include "a commitment from Iraq to destroy, under international supervision, all its ballistic missiles and weapons of mass destruction, and not to acquire such weapons in the future" [see also 6-9 Jan]. He says that his government will seek this commitment through the United Nations. {HansC 28 Feb, IHT 1 Mar}

28 February In Canada the department of External Affairs and International Trade gives broad distribution to a pamphlet entitled *Biological and Toxin Weapons: Be Vigilant* aimed at warning the public and scientific sectors against inadvertent involvement in the proliferation of BW weapons. Corresponding consciousness-raising measures have been taken in, for example, Britain and the United States [see 11 Dec 90].

1 March In Riyadh, US Central Command spokesman Brigadier

Richard I Neal says that Iraqi CW capacities may not have been as great as coalition forces had feared. Interrogation of prisoners-of-war had suggested "that the Iraqis were not that comfortable operating in a chemical environment, and we might have created a picture that they had a better capability than they really possessed." He says, further, that one Iraqi "chemical bunker" had been found by US Marines in Kuwait, but gives no further details {WP 2 Mar, IHT 2-3 Mar}. Previously there had been reports, of unidentified provenance, which told of chemical weapons having been "found in at least two Iraqi bunkers in Kuwait" {G 1 Mar}. Unidentified "sources" in Riyadh are subsequently reported to say that US forces had discovered bunkers marked to contain chemical weapons but that they had not found any actual chemical munitions {Ind 3 Mar}.

The commander of US armored forces, Lt-Gen Frederick Franks Jr, says that the Iraqi deployments of anti-CW decontamination equipment and gas masks was evidence that Iraq had intended to use chemicals.

The commander of US naval forces in the Gulf, Vice-Admiral Stanley Arthur, says he believes Iraq would have used CW weapons if the wind had not shifted at the last moment. {IHT 2-3 Mar}

1 March French intelligence reports reaching London today reportedly say that President Saddam Hussein, in the last hours of the war, had ordered his troops to use chemical weapons, but his command structure had disintegrated and his demoralized officers did not act upon his instructions. {G 2 Mar}

5 March Libya is building near the chemical plant at Rabta [see 17 Dec 90] a new complex that is believed to be for loading and assembling CW munitions and for BW research facilities, so the *Washington Times* reports, attributing unidentified US intelligence officials. A British company, also unidentified, is said to have supplied equipment for the complex through a Malaysian subsidiary. {WT 5 Mar}

Later the *Los Angeles Times*, also attributing unidentified US officials, reports that the complex is being built underground about 60 km south of Tripoli near Rabta and is for storing chemical weapons [see also 6 Feb], saying that a Defense Department official has described the construction as "an effort" by Libya to protect its chemical weapons "from what happened in Iraq" {LAT 6 Mar, IHT 7 Mar}. The *New York Times* relates further details provided by unidentified officials, quoting them as saying, however, that solid proof of the construction is still lacking {NYT 7 Mar}.

The Libyan foreign ministry, responding expressly to the *Washington Times* story, states that Libya "is now holding earnest negotiations with some European states to repair and operate the al-Rabtah industrial complex." {JANA 6 Mar in FBIS-NES 7 Mar}

6 March In Riyadh, US Army and Marine Corps officers tell the *Washington Post* that, since routing the Iraqi army last week, several hundred thousand allied troops have combed through bunkers, storage depots and other facilities in Kuwait and southeastern Iraq without finding a trace of nerve gas or other chemical weapons. They say that US intelligence analysts now believe that the weapons "never got distributed down to the battlefield" from storage sites north of the Euphrates. One of them adds: "I think we caught them with their pants down and they couldn't get it done in time. I think the leadership assumed that their distribution system was better than it was, and that when the attack started they thought they would have a period of days, perhaps even weeks, to infiltrate this stuff down" {WP 7 Mar}. Later reporting in the *Washington Post* speaks of allied forces having found artillery shells with yellow markings such as might suggest CW-agent loadings but which in fact turned out to be something else {WP 17 Mar}.

An unidentified Army general says that US intelligence analysts never had solid evidence that Saddam Hussein had given his field

commanders at the corps or division level permission to use chemicals [see also 3 and 20 Feb] {WP 7 Mar}. Yet contrary reports continue to appear in the US press, also with attribution to unidentified specialists. One such report states: "Intercepted communications suggested Saddam had delegated authority to use poison gas down to division commanders. During the later stages of the Iran-Iraq war, such authority was limited to corps commanders having three or more divisions under them" {*Minneapolis Star Tribune* 12 Mar}.

Earlier, an unidentified US military officer in Riyadh had been reported as saying that captured Iraqi soldiers had told interrogators that chemical weapons existed, the prisoners invariably adding, however, that their own units had never had the weapons. A conclusion being drawn by the US military command about Iraqi non-use of CW was that Iraq had either chosen not to use the weapons or, more likely, had been unable to find a way of doing so. {*Baltimore Sun* 5 Mar}

6 March British Defence Secretary Tom King, in testimony before the House of Commons Defence Committee, says that allied intelligence had shown that Iraq had covertly diverted nuclear materials for military purposes, but he declines to comment on whether the allies had discovered any evidence that the Iraqi army had an effective CW capability. {G 7 Mar}

6 March Iraqi Republican Guard forces fighting rebels in Basra are thought to have used mustard gas some days previously, according to unidentified intelligence officers with the British 1st Armored Division in Kuwait quoted next day in the London *Daily Telegraph*. The mustard gas is said to have been fired in canisters from tanks. {DTel 7 Mar}

6 March In the United States a group of Vietnam-war veterans goes to court in New York to try once again to gain recognition, and compensation, for ailments they claim are related to wartime exposure to Agent Orange but which did not manifest themselves until after 1984, the year of a \$180 million class-action settlement between the manufacturers of the herbicide and an earlier group of veterans. The manufacturers are seeking an order barring the veterans from proceeding with their action. {WSJ 6 Mar}

7 March Iraqi radio communications are intercepted in which, according to unidentified US officials quoted later by the *New York Times* and then the *Washington Times*, Republican Guard commanders seek and, apparently, are given authorization from Baghdad to use "special weapons" and "liquids from the air" against Shi'ite rebels laying siege to Karbala and Al Hillah {NYT 10 Mar, WT 11 Mar}. Kurdish insurgents, too, later say they had intercepted the radio message "Do not attack with artillery but use cologne" from the Iraqi high command to field commanders {G & NYT 11 Mar}.

Soon afterwards the US Government formally warns the representatives of Iraq at the United Nations and in Washington that it will not tolerate chemical attacks on the rebels. Secretary of State James Baker, speaking in Riyadh, says: "We would not look at all favourably on any use by Iraq of chemical weapons" {FT & IHT 11 Mar}. Contingency plans are said to have been drawn up for US air-strikes against any Iraqi military units doing so {NYT 10 Mar, WT 11 Mar}, this suggesting that the Administration believes that Iraq still possesses ample stocks of the weapons, the coalition's bombing campaign notwithstanding {NYT 14 Mar}.

7-20 March In southern Iraq, government forces use mustard gas, causing many casualties, during fighting in al-Najaf and al-Kafal, according to Sheikh Abu Maitham al-Saghir, a member of the Tehran-based Supreme Council for the Islamic Revolution in Iraq {Ind & SFE 10 Mar}, and according to Engineer Bayan Jabr, director of

the Council's Damascus branch {SANA 9 Mar in FBIS-NES 13 Mar}, who said his information had come from a Shi'ite oppositionist then in Najaf {STel 10 Mar}.

But unidentified US defense sources are shortly afterwards reported as denying that they have any actual evidence of chemical weapons having been used thus far in Iraq. {Ind & NYT 10 Mar}

Allegations of CW use in several parts of the region continue to be made, however. Refugees from the fighting interviewed in Iran say they had witnessed poison-gas attacks, though their accounts suggested to their interviewer that what had been used was some sort of irritant, such as a tear gas {G & NYT 14 Mar}. Yet a paramedic from Karbala later interviewed by the BBC says he had treated patients with blisters caused by mustard gas {Obs 24 Mar}. And a Kuwaiti doctor fleeing from Iraq speaks as follows to a reporter at a US Army checkpoint: "They used nerve gas in Karbala. We received lots of cases at the general hospital and I treated them. The people had muscular spasms, dilated pupils, they were semi-conscious. Some were defecating uncontrollably. A few died from asphyxiation." The doctor says, further, that the gas had been dropped from helicopters during fierce fighting in the city a few days prior to his departure on 20 March, by which time the Iraqi army had virtually gained control of Karbala {WT 27 Mar}. A doctor "now inside US lines," perhaps the same one, interviewed by the BBC, gives an account of tending 120 patients in Karbala with symptoms indicating exposure to nerve gas, and of how they had responded positively to treatment with atropine {WP 5 Apr}.

7 March The Director of US Naval Intelligence, Rear Admiral Thomas A Brooks, testifies as follows on CBW proliferation [see also 20 Feb 90] before a Congressional committee: "At least fourteen countries outside of NATO and the Warsaw Pact currently have an offensive chemical warfare (CW) capability. Many of these nations are likely to assist other countries in developing offensive capabilities as well. Ten more nations are believed to be either developing (or are suspected of seeking) an offensive CW capability." A chart entitled "Non-NATO/Warsaw Pact countries with offensive CW capability" accompanying his testimony lists 14 countries under the heading "probably possess" -- Burma, China, Egypt, India, Iran, Iraq, Israel, Libya, North Korea, Pakistan, South Korea, Syria, Taiwan and Vietnam -- and 4 countries under the heading "may possess," namely Indonesia, Saudi Arabia, South Africa and Thailand {prepared testimony before the Seapower, Strategic, and Critical Materials Subcommittee of the House Armed Services Committee, 7 Mar; NYT 10 Mar}. An unidentified US defense official is later quoted in the *Washington Post* as saying that these lists of countries represent the latest joint assessment of the Central and Defense intelligence agencies {WP 15 Mar}.

On biological warfare, Admiral Brooks testifies: "Iraq and Syria currently have developed an offensive BW capability. At least five other countries have offensive biological warfare programs in varying stages of development. Some of these nations may have a current offensive capability." He says that Iraq "has 'weaponized' the BW agents anthrax and botulinum toxin."

Several governments subsequently issue statements of rebuttal following press reporting of Admiral Brooks' references to their countries. They include India and Taiwan {Delhi domestic broadcast 11 Mar in FBIS-NES 12 Mar; CNA 11 Mar in FBIS-CHI 12 Mar}.

7 March The US Department of Commerce, three weeks behind schedule [see 14 Feb], issues in interim form two new sets of export control regulations; they implement the first two elements of the President's Enhanced Proliferation Control Initiative [see 13 Dec 90]. {FedR 13 Mar}

The first interim rule provides an expansion of foreign-policy controls on CW-agent precursors. It makes all 50 chemicals on the Australia-Group precursor list [see 11-13 Dec 90] subject to export-

licensing requirements for all destinations other than NATO and other Australia-Group countries.

The second interim rule imposes foreign-policy controls on equipment and technical data related to the production of chemical and biological weapons. [The weapons themselves are controlled through the State Department's International Traffic in Arms Regulations and their Munitions List, rather than through the Commerce Department's Export Administration Regulations and their Commodity Control List.] These new regulations apply to twelve categories of dual-purpose technology, a rather shorter list than had originally been contemplated [see 21 Dec 90]. Such equipment and data will now need licenses before they can be exported to "particularly sensitive regions ... as well as to countries elsewhere whose activities may have CBW-related implications" {White House, Office of the Press Secretary fact sheet, 6 Mar}. The list of controlled destinations comprises Country Groups S and Z from existing export controls -- currently Libya in Group S, and Cambodia, Cuba, North Korea and Vietnam in Group Z -- and an overlapping new group comprising Bulgaria, China, Cuba, "Middle East" (defined as including Bahrain, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates and Yemen), Myanmar, North Korea, Romania, South Africa, "Southwest Asia" (defined as including Afghanistan, India, Iran and Pakistan), Soviet Union, Taiwan and Vietnam: 28 countries in all [see also 14 Feb and 7 Mar].

A statement issued by Commerce Secretary Robert A Mosbacher says that the administration will begin a diplomatic effort "to seek maximum cooperation by other countries to adopt similar controls to stop the spread of these weapons, which violate international arms control goals." A similar statement is issued by the White House, saying that the United States plans to persuade not only its allies but also countries such as China and the Soviet Union. {FT, NYT & WP 8 Mar; AN 13 Mar}

The Department of Commerce also publishes for comment a proposed rule that would implement elements 3, 4 and 6 of the Enhanced Proliferation Control Initiative [see 13 Dec 90]. The proposal envisages several additional types of controls, including a requirement of individual citizens that they obtain licenses before performing services whose effect could be to aid proliferation. Another such regulation, one of several aimed at current loopholes, is a catch-all control that would empower the Office of Export Licensing to "inform an exporter at any time that a validated license is required for a specific export or reexport transaction or for exports or reexports to a specific end-user or end-use because of an unacceptable risk that such shipments will be used in sensitive nuclear activities, in the design, development, production, stockpiling, or use of chemical or biological weapons, or in the design, development, production or use of missiles." Comments on the proposal are due by 12 April. {FedR 13 Mar}

8 March In Belgium the Cabinet approves new legislation that would regulate export of military and dual-use equipment [see 29 Dec 89]. A bill is to be submitted to parliament shortly. {DN 1 Apr}

8 March The Angolan Government is once again accused [see 7 Feb] by UNITA rebels of using chemical weapons, a short time previously, against the guerrillas. {KUP clandestine broadcast 8 Mar in FBIS-AFR 11 Mar; DTel 12 Mar}

11 March In Germany after an investigation that began in November 1987 [see 17 Aug 90], prosecutors in Darmstadt file charges against 12 German businessmen suspected of helping supply materials and know-how to Iraq to enable it to produce poison gas [see also 6 Feb] {FR 13 Mar}. The charges include "violation of export laws, fraud and disloyalty," the two latter charges stemming from suspicions that the accused had used the companies they worked

for as fronts to carry out illegal transactions with Iraq. The prosecutors believe that the plant sold to Iraq was designed to manufacture mustard and nerve gases, not pesticides as claimed by the suppliers {FT & IHT 13 Mar}. Those charged include a former employee of Preussag AG, the engineering, steel and minerals conglomerate, and employees of Karl Kolb GmbH and two subsidiary companies, Pilot Plant of Dreieich and Water Engineering Trading GmbH of Hamburg {FT 25 Mar}. The indictments are based on the final report of the Iraq Special Commission of the Customs Institute of Criminal Investigations (ZKI) in Cologne, a 309-page document from which *Der Spiegel* had apparently been quoting extensively the week previously in a report which detailed the international ramifications of the enterprise, including the involvement of Austrian and French companies {DerS 4 Mar in FBIS-WEU 5 Mar}.

13 March Syria has recently started to produce agent VX according to unidentified intelligence sources quoted in the *Washington Times*. {WT 13 Mar}

13 March In the CD Ad Hoc Committee on Chemical Weapons, Chairman Serguei Batsanov distributes a non-paper, *Elements of a Possible Package*, "intended for consultations with the Chair with the view to arrive at a common understanding of what issues should be considered within the package approach." *Arms Control Reporter* later published the paper, together with a short interview-based commentary on it. {ACR no. 5-91, pp. 704.B.474-5}

14 March In Iran, a seminar on the effects of CW agents and weapons is held in Tehran. It is addressed by Armed Forces Command chief of staff Hoseyn Finizabadi. He speaks of the Iraqi use of chemical weapons against Iran and against the Kurds: "Iran's border areas were attacked with toxic arms 400 times by Iraq during its war against the Islamic Republic, and the crime claimed a large number of civilians and combatants as victims. The chemical arms used by Iraq included hand grenades, mortar and artillery shells, bombs and rockets, filled with mustard, suffocating and sometimes nerve gases." He states that 30,000 Iranian combatants had been injured by chemical weapons on 10 February 1986 during *Val-Fajr-8* operations on the southern fronts. He says: "We reserve the right for ourselves to get technological know-how necessary to confront the chemical agents our enemies might use against us." {IRNA 14 Mar in FBIS-NES 15 Mar}

15 March In Moscow, according to the USSR Foreign Ministry, President Gorbachev advocates to US Secretary of State James Baker serious consideration of the proposal to establish a zone free of "nuclear, chemical and other weapons of mass annihilation" in the Middle East, the countries of the region to aim at "defensive sufficiency" in their armament levels. {Obs 17 Mar}

18 March The US Senate Select Committee on Intelligence is to conduct a series of hearings on the quality of US intelligence on Iraq prior to the occupation of Kuwait, so the *Washington Post* reports, speaking of "an overestimation of the threat posed by Iraqi chemical weapons" as being among the specific topics being considered for examination. {WP 18 Mar}

19 March US Defense Secretary Dick Cheney, testifying before the House Foreign Affairs Committee on "our new US defense strategy in the context of the changing security environment," had written as follows in his prepared statement: "Iraq also illustrates the growing problem of the proliferation of weapons of mass destruction. For the first time in more than 70 years, we face the possibility of the use of chemical and biological weapons against us in a conflict. The use of such capabilities would require a devastating response. We must respond resolutely not only because of current combat

requirements, but also to deter future use. ... By the year 2000, it is estimated that ... 30 countries will have chemical weapons, and 10 will be able to deploy biological weapons as well."

20 March The United States submits to the CD a detailed paper on the destruction of its stockpile of BZ and BZ munitions, completed in June 1990 [see 27 Feb 90]: a 13-year project that had cost \$162.9 million to destroy some 1500 cluster munitions and 5 tons of bulk agent, and to detoxify several hundred tons of contaminated residues. {CD/1074}

21 March In Iraq loyalist forces use crop-spraying aircraft and helicopters to drop sulphuric acid on crowds in Kirkuk celebrating Kurdish "liberation" of the city, according to a Damascus spokesman of the Tehran-based Supreme Council of the Islamic Revolution in Iraq. {DTel, FT & G 22 Mar}

Over the next few days there are similar reports of helicopter acid-dropping not only against rebels in the north of the country, but also in Basra, Amara and elsewhere in the south [see also 7-20 Mar]. {DTel 26 & 28 Mar}

21 March The secretariat of the International Federation of Chemical, Energy and General Workers' Unions (ICEF) circulates to affiliates particulars of recent developments concerning the Australia-Group Export Control List of potential CW-agent precursors and also the Geneva CWC negotiations. The communication expresses support for the Australian-Group controls in the following terms: "Provided that [the List] is used purely to prevent the spread of chemical weapons (and not, for example, as a pretext for restricting legitimate transfers of chemicals to newly industrializing countries), we believe that it can only enhance the reputation of the chemical industry, and that its implementation deserves the full moral and practical support of trade unionists everywhere. ... However, these export controls are only a stop-gap measure. It is the policy of the ICEF and of the international trade union movement as a whole that a global Chemical Weapons Convention must be concluded and implemented as a matter of the greatest urgency." {Letter dated 21 Mar with enclosures, addressed to all ICEF affiliates}

21 March Bulgarian Deputy Foreign minister Ivan Garvalov tells the CD that his country "has initiated the procedure whereby it will drop its reservations to the 1925 Geneva Protocol." {CD/PV.588}

21 March Japan reaffirms to the CD in Geneva the declaration it had made in the First Committee of the UN General Assembly during October 1990 that Japan intends to become one of the original signatory states of the CWC. {CD/PV.588}

21 March Venezuela tells the CD more about its plans for the Caracas regional seminar on chemical weapons [see 7 Aug 90]: "This seminar will be held from 1 to 5 July of the current year. ... [It] will be designed to acquaint all Latin American and Caribbean States with the scope, the purposes and goals of the convention, the verification machinery that is to be set up, and generally speaking all the legal and technical aspects of the future convention on chemical weapons in order to facilitate the internal administrative and legislative process that is to be followed for the early ratification, entry into force and implementation of this instrument. It is hoped that the participating Governments will give preference to designating officials from their foreign ministries or other governmental bodies who in one way or another would participate in decision-making relating to the adoption and setting in motion of the convention." {CD/PV.588}

22 March In Germany, people living around Clausen visit the US Army depot there to inspect the former storage site of the US Euro-

pean stockpile of nerve-gas weapons, now removed to Johnston Atoll in the Pacific [see 13 Feb]. {*Die Rheinpfalz* 23 Mar}

22 March In Germany the Bundestag adopts the Chancellor's proposals for tightening export controls [see 6 Feb], which would amend the Foreign Trade and Payments Act and the code of criminal procedure. Besides authorizing an expansion of domestic intelligence-collection activities, the new measures would increase the minimum penalty for violations to two years in prison and allow authorities to confiscate the entire proceeds of illegal deals and to close companies. Moreover, a successful prosecution no longer would have to prove that breaching export controls had damaged the German national interest. {DTel 23 Mar, FT 25 Mar, DN 1 Apr}

23 March A UN team recently returned from a week assessing bomb damage in Iraq is reported to have found signs that the bombed Baghdad baby-milk factory [see 8 Feb] had also been used for other purposes: the main factory building had indeed been set up to manufacture powdered infant formula, but outhouses at the rear seemed to have been used for something else {TL 23 Mar}. This apparent leak of UN findings succeeds an earlier report portraying the factory as a center for nuclear-weapons research and development {G 11 Mar}.

However, on British television two days later, a former director of the US Defense Intelligence Agency, Lt-Gen Leonard Perroots, says that the American intelligence community had got it wrong in believing the huge milk-vats at the factory to have been used to mix chemical and biological compounds for use in weapons: "We made a mistake." {BBC *Panorama*, as reported in TL 25 Mar}

25 March In Baghdad, Republican Guards attack demonstrators with "phosphorus and napalm bombs and poison-gas grenades" according to the Iranian official news agency. {IHT 26 Mar}

26 March An Iraqi helicopter, reportedly carrying chemical weapons, lands in Iran, its four-man crew seeking political asylum and telling Iranian interrogators that it had been ordered to bomb rebel positions in al-Basrah and al-'Amara with chemicals [see also 21 Mar], according to Iraqi oppositionists, the Tehran-based Shi'ite Muslim al-Da'wah Party. {Jerusalem domestic broadcast 26 Mar in FBIS-NES 27 Mar}

27 March In Cambodia, Phnom Penh radio accuses guerrilla forces of using chemical weapons in the 12-year-old civil war. The accusation, apparently the first of its kind to have been made by the government (as opposed to the resistance [see 22-26 Feb]), says that artillery shells containing "toxic substances" had been fired during a guerrilla assault in Battambang Province the previous week. {IHT 28 Mar}

27 March In the CD Ad Hoc Committee on Chemical Weapons, the Chairman of Working Group B [see 14 Feb, CD] distributes a paper he has prepared "with the aim of facilitating further consideration by delegations of a possible alternative approach to the verification of the chemical industry." The approach takes in elements of the Swedish proposal [see 14 Feb, Sweden], including the concept of 'capable plant sites,' without, however, formulating any definition of such sites {CW/Group B/4}. *Arms Control Reporter* later publishes an interview-based commentary on the paper {ACR no. 5-91, pp. 704.B.480-2}.

28 March In Iran, the daily newspaper *Jomhuri-ye Eslami*, in its weekly political analysis, regrets that the US Government has been ignoring the use of chemical weapons by Saddam Hussein "in the entire zone of the uprising" against him [see 7-20, 25 and 26 Mar]. {IRNA 28 Mar in BBC-SWB 29 Mar}

28 March In Poland the Foreign Ministry says that the USSR Government has now agreed to let Polish inspectors check for the presence of chemical weapons at Soviet bases in the country {TL 29 Mar; Xinhua in CN 29 Mar}. Polish experts had previously been denied access [see 21 Feb]. A spokesman for the Northern Group of Soviet Forces later states that this is "a goodwill gesture on the part of the Soviet Government extended to the Polish public." He adds: "During the inspection [of two Northern-Group units, unidentified], provisions and procedures on the conduct of inspections on request which were elaborated at the Geneva Disarmament Conference will be applied, and this will make it possible not only to verify the absence of chemical weapons, but also to test in practice the relevant verification provisions elaborated at multilateral talks." {KZ 18 Apr in FBIS-SOV 23 Apr}

The commander of Soviet forces in Poland, General Viktor Dubynin, later tells *Rzeczpospolita* that there are not Soviet CW weapons in the country and that there had never been any. {Warsaw radio 9 Apr in BBC-SWB 10 Apr}

28 March In Geneva the CD concludes its first session [see 22 Jan] and is due to reconvene on 16 May.

Though the session had been overshadowed by the Kuwait War, this had, in the opinion of some participants, improved the prospects for the CWC: the sense of urgency had been heightened and, at least within the Western Group, a greater readiness to compromise had been evident, the general working atmosphere now seeming to be that of a negotiation entering its final stage. A detailed, interview-derived account of progress made within the Ad Hoc Committee is later published by *Arms Control Reporter*. {ACR no. 5-91, pp. 704.B.478-84}

29 March The US Air Force publishes a further report, the fourth, from its study of airmen exposed to Agent Orange during the Vietnam War. The report compared 866 airmen who had sprayed the herbicide with 804 veterans who were thought to have had less exposure to it and had lower levels of dioxin in their blood. No relationship between Agent Orange and any form of cancer was found, though there was some correlation with conditions such as diabetes. {WP 30 Mar, C&EN 15 Apr}

30 March The Egyptian newspaper *Al Ahram* carries criticism of the provision in the draft cease-fire resolution just approved by the five permanent members of the UN Security Council {WP 28 Mar} that would require Iraq to destroy its weapons of mass destruction, saying that this should happen only in the framework of a general agreement to rid the entire region of such arms {NYT 2 Apr}. In the Security Council both France and the Soviet Union had previously argued in a similar fashion, saying that destruction of Iraqi CBW weapons should be part of a regional disarmament plan involving Israel and other Middle Eastern countries {G 28 Mar}. And China had warned that the destruction plan, originally proposed by Britain [see 28 Feb] {NYT & TL 14 Mar, WT 18 Mar, Ind 20 Mar}, might establish a potentially troublesome precedent {DTel 26 Mar}.

1 April From Iraq, where government forces are crushing rebellion in both the north and the south of the country [see 6, 7, 7-20, 21 and 25 Mar], the huge exodus of refugees is now augmented by hundreds of thousands of Kurds, harried by helicopter-gunship attacks and fearful of a repetition of earlier chemical attacks [see 29 Aug - 3 Sep 88] {Ind 3 Apr, TL 4 Apr, DTel 18 Apr}. The Turkish army is blocking their entry into Turkey.

1 April In Tokyo, a Foreign Ministry official reportedly says that Japan, which is the world's largest aid donor, is planning to make its overseas economic aid conditional on the military policies of recipient countries. Among other things, it is considering putting

Forthcoming Events

* The CD completes its Spring session on 27 June; it will resume work for the Summer on 23 July.

* In Caracas, the Venezuelan Government will host a regional seminar on chemical weapons during 1-5 July, with participation from CD delegations and officials from Latin American and Caribbean states.

* In Washington on 16 July the Center for Strategic and International Studies will convene a one-day discussion on "Chemical Disarmament and US Security."

* The Third Review Conference of the Biological Weapons Convention will be held from 9-27 September in Geneva.

* In Geneva on 11 September, the Coun

cil for Responsible Genetics and the Federation of American Scientists will co-sponsor a briefing for delegates to the BWC Review Conference on "Issues and Proposals Before the Third Review Conference." For more information contact Margo Stark at (617) 868-0870.

* In Frankfurt during 24-27 October, the Peace Research and European Security Studies (AFES-PRESS) center will hold a seminar on "Controlling Military Research & Development and Exports of Dual Use Technologies as a Problem of Disarmament and Arms Control Policy in the 1990s." For more information, contact Hans Günter Brauch (phone 06-261-12912, FAX 06-161-15695).

* In Brussels, the Centrum voor Polem

ologie of the Vrije Universiteit Brussel, and the Groupe de Recherche et d'Information sur la Paix (GRIP) will hold their 3rd Annual Conference on Chemical Warfare, entitled *The Second Gulf War and the CBW Threat* during 29-30 November. The contact persons are: Jean Pascal Zanders at VUB (phone 32-2-641-2028, FAX 32-2-641-2282) and Eric Remacle at GRIP (phone 32-2-241-8096, FAX 32-2-241-1933).

* The American Defense Preparedness Association, in cooperation with the US Army Chemical School, will convene a symposium at the School in Anniston, Alabama during 3-5 December on the theme "After the Treaty -- an Era of transition." For more information contact Ms. Lynne Daley, 2101 Wilson Boulevard, Suite 400, Arlington, VA 22201-3061.

limits on aid to countries that possess or manufacture nuclear, chemical or biological weapons. {IHT 2 Apr}

1 April In Germany, the Munich magazine *Bunte* reports that the Bavarian government has been asked by the Austrian Interior Ministry for help in destroying the 29,000 mustard-gas shells remaining from World War II currently in storage at Grossmittel-Haschendorf, 40 km south of Vienna. {FR 2 Apr}

2 April In the CD Western Group, so the *Washington Times* reports, the United States had the previous week put forward a proposal on challenge inspection which abandoned the "anytime, anywhere" approach originally advanced in the 1984 US draft CWC [see also 17 Apr 90]. The new proposal would, according to the report, allow inspectors to "be delayed at the gates of a facility suspected of producing chemical weapons and then refused access to specific buildings on the site." Unidentified US officials are quoted as saying that "the new US position moves close to that of Great Britain, which has called for 'managed access' to a site that the host country considers particularly sensitive." {WT 2 Apr}

Arms Control Reporter later publishes a detailed commentary on the proposal (which it says had been presented on 28 March) derived mainly from an interview with an unidentified Canadian diplomat. {ACR no. 5-91, pp. 475-8}

3 April In Czechoslovakia, Defense Ministry spokesman Petr Tax tells reporters that no decision has yet been taken on the return of the Czechoslovak anti-CW unit from Saudi Arabia [see 30 Jan] {CTK 3 Apr in BBC-SWB 5 Apr}. Two weeks previously, Defense Minister Lubos Dobrovsky had told the Defense and Security Committees of the Federal Assembly that, given the continuing possibility of "local military actions," it would be expedient for the unit to remain in place "to continue to fulfil reconnaissance and backup tasks" {Prague domestic service 14 Mar in BBC-SWB 21 Mar}.

3 April The UN Security Council votes 12 against 1 (Cuba), with 2 abstentions (Ecuador and Yemen), to adopt Resolution 687 which offers Iraq a permanent cease-fire and a gradual easing of the UN trade-embargo in return for, among other things, Iraqi commitment

to scrap all weapons of mass destruction and never re-acquire them. {NYT 4 Apr, WP 7 & 12 Apr}

As regards CBW weapons, the resolution specifies that the locations, amounts and types of all Iraqi "chemical and biological weapons and all stocks of agents and all related subsystems and components and all research, development, support and manufacturing facilities" must be declared to the United Nations by 18 April. By 18 May the UN Secretary-General, in consultation with governments and, where appropriate, the World Health Organization, must submit a plan for approval by the Security Council whereby a Special Commission will, within 45 days of the plan being approved, accomplish two things. First, the Commission must inspect on site the CBW weapons, agents, components and facilities declared by Iraq; and it must also inspect any further locations which it has itself designated for on-site inspection. Second, it must take possession from Iraq of all the declared CBW items, plus any further items it may have found itself, "for destruction, removal or rendering harmless, taking into account the requirements of public safety ... under international supervision."

The Special Commission, which the cease-fire resolution also charges with specific tasks regarding Iraqi missile and nuclear capabilities, is required, further, to assist the Secretary-General in developing a plan, by 1 August, for monitoring and verifying Iraq's compliance with the undertaking "not to use, develop, construct or acquire" CBW weapons, agents, components or facilities.

The cease-fire resolution, in paragraph 14, "takes note that [these actions] represent steps towards the goal of establishing in the Middle East a zone free from weapons of mass destruction and all missiles for their delivery and the objective of a global ban on chemical weapons." {S/Res 687}

4 April In Egypt, whose government had earlier informed the US government that it opposed the inclusion of CBW-weapons destruction provisions in the Iraq-war ceasefire resolution [see also 30 Mar] {Radio Monte Carlo 28 Mar in FBIS-NES 29 Mar}, an unidentified "senior military official" is reported thus: "The Western countries, by allowing Israel to have nuclear weapons, have given Israel the upper hand in the region. And it may work for now but not in the future. ... All the countries of the region have chemical pro-

grams and most of them are also trying to develop nuclear programs. And we have one country which we are sure has nuclear weapons and that country is Israel. When we are speaking about control of weapons of mass destruction, it cannot be one or the other. It must be all of them -- chemical, biological and nuclear." {Ind 5 Apr}

4 April In Moscow, *Komsomolskaya Pravda* publishes an interview with a former general of the KGB, Oleg Kalugin, who is now a radical member of the Soviet parliament, in which he states that the KGB had helped plan the murder in London in 1978 of the Bulgarian dissident Georgi Markov [see 21 Feb], furnishing the poison and its umbrella delivery device. He was repeating what he had said a few days previously during an interview with Radio Liberty {TL 30 Mar; TASS 2 Apr}. KGB spokesman Lt-Gen Leonid Shebarshin describes the allegation as a "malicious invention" {G & WT 5 Apr}. But General Kalugin repeats his statement during an interview for Bulgarian television next day, adding further details {BTA 5 Apr in FBIS-EEU 8 Apr; Tag 9 Apr; MN 5-12 May}.

4 April US CD Ambassador Stephen Ledogar, interviewed for *Arms Control Today*, speaks of a setback in the pace of the US-Soviet CW bilaterals: "There now seems to be a real question as to whether [the USSR] will be able to meet the destruction schedule set forth in the [June 1990 bilateral destruction] agreement. Until we are confident that the dates that are in that agreement are going to be met, I cannot conceive of this administration, even if we finish the [inspection] protocol [see 28 Dec 90], putting the package before the Congress and risking, while it's being looked at up there, categorical revelations that the Soviets cannot meet the destruction dates. So we have to get that straightened out before I would predict that anything would be sent up to the Hill." {*Arms Control Today* May}

5 April Indian forces in Kashmir have been using chemical weapons according to communiqués from the Majlis-i-Amal Kashmir, the Pakistan-supported Kashmir Action Council, which alleges, further, that India is deliberately keeping international observers out of the afflicted region. {Islamabad domestic broadcast 5 Apr in FBIS-NES 5 Apr}

Similar reports are raised in the Pakistani National Assembly on 11 April by Science and Technology Minister Hamid Nasir Chatha. {*The Muslim* 14 Apr in FBIS-NES 16 Apr}

6 April Iraq, in a bitter 23-page letter to the UN Secretary-General, accepts UN Security Council Resolution 687 [see 3 Apr]. The Security Council formally notifies Iraq that the cease-fire is in effect on 11 April. {NYT 8 Apr, WP 12 Apr}

8 April Iraq ratifies the 1972 Biological Weapons Convention and deposits its instrument of ratification in Moscow with the USSR Government -- one of the three co-depositary governments. {S/22614}

8 April In Israel, the Knesset State Control Committee endorses an as-yet-unpublished report by State Comptroller Miryam Ben-Porat in which she had criticized the anti-CW civil-defense measures of the Israeli Defense Forces, saying among other things that as many as 1.4 million civilian-issue gas masks made between 1972 and 1986 may give insufficient protection. The new IDF Chief of General Staff, Lt-Gen Ehud Baraq, appearing before the committee, rejects this criticism. {JDW 30 Mar; *Jerusalem Post* 9 Apr in FBIS-NES 11 Apr; Tag 15 Apr; JDW 27 Apr}

8 April In Germany, a secret report by Federal Economics Minister Möllemann critical of the export policies of his predecessors in office is leaked in *Der Spiegel* magazine. The report is said to be espe-

cially critical of lax export controls, such that even in 1990 the Bundesamt für Wirtschaft had licensed the export to Iraq of reportedly CW-relevant chemicals and equipment. {DerS 8 Apr in FBIS-WEU 9 Apr}

8 April In Washington, Under Secretary of Commerce for Export Administration Dennis E. Kloss, who had submitted his resignation a month previously {DD 11 Apr}, testifies at a Congressional hearing that, in April 1990, he had asked for an embargo of selected technology exports to Iraq and that "the State Department adamantly opposed my position, choosing instead to advocate the maintenance of diplomatic relations with Iraq." The hearing, before the House Foreign Affairs Subcommittee on International Economic Policy and Trade, had been called after disclosures that, between 1985 and 1990, \$1.5 billion worth of dual-use products, including chemicals, had been approved for export to Iraq {NYT 10 Apr}.

Subcommittee Chairman Sam Gejdenson later speaks of "the State Department's deliberate attempt to mislead the Congress by stating falsely that US policy did not allow the sale of biological agents to Iraq before 1989," referring to at least 18 licenses issued by the Commerce Department for export of biological agents to Iraq during 1985-90, including six shipments to the Iraqi Atomic Energy Commission {FT 11 Apr}.

8-12 April The Preparatory Committee for the Third BWC Review Conference [see 14 Nov 90] meets in Geneva with the participation of 68 of the treaty's States Parties (112, as at 1 January 1991) and, by invitation, 5 States Signatories. It is decided that Argentina will preside over the review conference, presumably in the person of Ambassador Roberto García Moritán, who is accordingly, on the final day of the meeting, elected to chair the Committee. The presidency decision is based on an "understanding that a representative of the Group of East European States will preside over meetings of States Parties which might take place as a follow-up between the Third and Fourth Review Conferences." The Committee agrees on the dates 9-27 September 1991 for the Review Conference, adopts a draft agenda and rules of procedure for it, and decides what background documentation is to be prepared. {BWC/CONF.III/1}

9 April In Britain, the Chemical and Biological Defence Establishment (as it is now to be called) at Porton Down is formally constituted as a Defence Support Agency {UK Ministry of Defence news release 9 Apr}. The establishment is thus being preserved outside the new Defence Research Agency, which, with heavy job cuts, merges the Admiralty Research Establishment, the Royal Aerospace Establishment, the Royal Armament Research & Development Establishment and the Royal Signals & Radar Establishment {DTel 29 Mar}. The government had previously told parliament: "The professional and internationally recognized standards which have contributed to the success of work at Porton Down for the last 75 years will continue to be upheld. The greater freedom and flexibility now granted to the director general will provide him with new opportunities to enhance the Establishment's successful role." The government statement had then gone on to list the "range of challenging key performance targets" with which the director general, Graham Pearson, is now confronted. {HansC 26 Mar}

9-11 April In Moscow an international conference on chemical weapons is organized by the Commission on International Security and Disarmament of the Soviet Peace Protection Committee. The Commission is headed by former USSR CD Ambassador Viktor Israelyan. In addition to foreign participants, the conference is attended "by experts from the Soviet Defense Ministry, Soviet and Russian parliamentarians, [and] leading Soviet scientists." {TASS 9 Apr in FBIS-SOV 11 Apr}

10 April In Moscow the International Chetec Corporation states that it will fund initial development of a proposal to use nuclear weapons for the chemdemil of Soviet CW weapons {ASA Newsletter 6 Jun}. The proposal apparently envisages underground nuclear explosions on the Novaya Zemlya islands {FAZ as in CN 8 May}.

10 April In Germany, news media carry a report that the 'Pharma 150' plans for a CW-agent factory which Imhausen-Chemie GmbH supplied to Libya for the facility at Rabta [see 5 Mar] had been passed to another, unidentified country in the Third World as well, and that that country had already received deliveries on the basis of the blueprints. There is also a report that the supposed second Libyan CW-agent factory, at Sebha [see 17 Dec 90], was probably based on another Imhausen project, 'Pharma 200.' {DPA 11 Apr in FBIS-NES 12 Apr; Tag 12 Apr}

12 April In Washington, US Defense Secretary Dick Cheney announces his recommendations for further military-base closures. They include Fort McClellan, Alabama, which houses the US Army Chemical School and is the effective seat of the Chemical Corps. The recommendations are to be considered by a special commission prior to decision, due 1 September, by President Bush {CQ 13 Apr}. The *DOD Base Closure and Realignment Report* proposes that the Chemical School be relocated to Fort Leonard Wood, Missouri, and that the Chemical Decontamination Training Facility at Fort McClellan be placed in 'caretaker status' {ITA 27 May}.

Strong opposition to closure of Fort McClellan is soon to be heard from some voices in Congress. {Congressman Glen Browder, prepared statement before the House Armed Services Subcommittee on Readiness, 16 Apr}

14 April Syrian Foreign Minister Farouk al-Sharaa says, during a press interview following President Assad's talks with visiting US Secretary of State James Baker: "We would be ready to make the Middle East a zone free of all mass destruction weapons. This means nuclear, chemical and biological." But this would be "at the conclusion of the peace process after Israel's withdrawal from the occupied Arab lands." {NYT 18 Apr}

15 April In the Sudan, following a recent visit by Iraqi Deputy Prime Minister Tariq 'Azziz, President al-Bashir has agreed to store Iraqi chemical weapons and Scud missiles, according to the Sudanese People's Liberation Army {Radio SPLA in BBC-SWB 18 Apr}. The allegation is repeated later {Sawt al-Kuwayt al-Duwali 30 Apr in FBIS-NES 2 May}.

15 April In Angola, the UNITA forces which began attacking Luena in Moxico Province the day previously are now using toxic substances, according to a government radio broadcast. {Radio Nacional 15 Apr in BBC-SWB 17 Apr}

According to a UNITA release immediately after the broadcast, government aircraft are dropping chemical bombs on civilian settlements in UNITA-controlled areas on the outskirts of Luena [see also 8 Mar]. {KUP 15 Apr in BBC-SWB 17 Apr}

15 April Today is the due date for the annual submissions of BWC-related information to the UN in accordance with the agreement reached by States Parties at the Second BWC Review Conference.

16 April In the US Congress, the House Armed Services Readiness Subcommittee releases a 'sanitized' version of the report on the US Army's Chemical Defense Program which, together with other Congressional committees, it had requested from the General Accounting Office during the previous year, and which it had received on 15 January. The report had remained security-classified until 5 April because of the special sensitivity of its findings during a war in

which adversary resort to CW was expected. The report had concluded that US soldiers were poorly trained and equipped for fighting within a CW environment {WP 13 Apr}.

The report noted, however, that its 13-month review of Army anti-CW preparedness had been concluded in July 1990, and that since then the prospect of Iraqi CW attack had brought about an increase in training, equipment and general attention to the problem. {GAO/C-NSIAD-91-17}

17-18 April In Poland, a team of Polish experts inspecting two Soviet military bases [see 28 Mar] finds "no chemical weapons or means or equipment for their use." The findings are to be presented in a joint Polish-Soviet communiqué to the CD in Geneva. {PAP 19 Apr in FBIS-EEU 22 Apr}

18 April The clandestine radio station *Voice of Rebellious Iraq* alleges that Iraqi government aircraft are dropping chemical weapons, killing civilians, in areas around al-Sulayminah, where it says Kurdish revolutionaries are regaining lost ground [see also 1 Apr] {Voice of Rebellious Iraq 18 Apr in FBIS-NES 19 Apr}. Some substantiation by an unidentified doctor in the Arbil region is later reported {DTel 1 May}.

18 April Iraqi Foreign Minister Ahmed Hussein, in a letter to the UN Secretary-General, reaffirms Iraq's obligations under the 1925 Geneva Protocol, announces that Iraq has ratified its signature of the 1972 Biological Weapons Convention [see 8 Apr], and transmits a declaration of Iraq's CBW capabilities in accordance with the cease-fire resolution [see 3 Apr].

The declaration states that "Iraq does not possess any biological weapons or related items."

On chemical weapons, the declaration specifies storage sites at Al-Walid airbase (336 "binary-system" sarin bombs), at Saddam and Qadisiyah airbases (140 "500-gauge" mustard-gas bombs), at Saddam, Tammuz, Qadisiyah and Al-Bakr airbases and Al-Tuz airfield (900 "250-gauge" mustard-gas bombs) and at a "chemical proving ground" near Fallujah (105 155mm mustard-gas artillery shells). The other CW facility specified in the declaration is the "Muthanna State Establishment, 70 kilometers west of Baghdad" where there are stated to be five sites each with five research and development laboratories, six production sites (one each for sarin and mustard gas and four for "intermediary materials") and five sites each with workshops for filling munitions ("artillery, mortars, aerial bombs and missiles"); all 16 sites are listed as "destroyed." The declaration says that in storage at Muthanna are 6920 sarin 120mm missile warheads, 2500 sarin Saqr-30 missile warheads "under debris of levelled storehouse" and 200 sarin "DB-2 aerial bomb (aluminum)" also under debris, plus 75 tons of sarin "finished product," 280 tons of mustard gas, 150 tons of intermediate material for tabun and 500 tons of what appears to be phosphoryl chloride, also intended for production of tabun (a site for which, however, is not declared). [The declared holdings would seem to amount to no more than about 1200 tons of chemicals, rather less than half of the tonnage being actual CW agent, the greater part of the agent supply being unweaponized.]

Elsewhere in the declaration there is reference to storage at Du-jayl of 30 chemical warheads for *Al-Hussein* ballistic missiles.

Initial US Administration comment on the declaration is skeptical in tone, especially with regard to biological weapons {Ind, NYT & TL 20 Apr; IHT 20-21 Apr}. According to one commentator (who did not, however, cite his sources), "US intelligence [had previously] confirmed that Hussein's government was carrying out research on as many as 20 biological agents, and was beginning to weaponize militarily significant quantities of anthrax, cholera, typhus and tularemia" {Sea Power June}.

18 April Belgium, with much experience in locating and destroying

old World War I CW munitions on its soil, has volunteered its help in the United Nations destruction of Iraqi CW capabilities [see 3 Apr], so the *Wall Street Journal* reports. {WSJ 18 Apr}

18 April The *Wall Street Journal* carries an article about the 1979 Sverdlovsk anthrax outbreak [see 22 Aug 90] by a former correspondent of the London *Financial Times* in which he states that he now believes that the eye-witnesses he had interviewed and reported in 1980 {FT 10 Jun 80} had in fact been KGB disinformation agents purveying stories which falsely suggested that the epidemic had been a natural one. {WSJ 18 Apr}

22 April The Secretary-General of the United Nations announces the appointment of Ambassador Rolf Ekéus of Sweden as Executive Chairman of the Special Commission mandated by Security Council Resolution 687 [see 3 Apr]. The Deputy Executive Chairman is to be Robert Galucci, a former US State Department official currently teaching at the US Naval War College. {UN Press Release}

Ambassador Ekéus says at a press conference in Stockholm that the Special Commission will have about 25 members grouped into teams to direct the work of about 300 highly trained technicians who will use the most sophisticated equipment to identify, locate and destroy Iraqi weapons. He also says that international controls will have to be set in place over Iraq's entire chemical industry. {C&EN 29 Apr}

22 April In Germany the Bundesrat (now controlled by the SPD) votes against the proposed new export-control legislation which the Bundestag had adopted on 22 March [q.v.], the majority opposing the bill on the grounds that it would violate civil liberties {NYT 23 Apr}. The Bundesrat deletes an article of the legislation authorizing communications-intercepts by Customs authorities, and the bill thus amended goes back to the Bundestag.

23 April In the US Congress, the Assistant Secretary of State for Politico-Military Affairs, Richard Clarke, testifies before a Joint Economic subcommittee on chemical, biological and other counterproliferation measures. Accompanying his testimony is a diagram of the structure of the interagency Policy Coordinating Committee on Non-Proliferation which he chairs, showing, as an element of its CBW Subcommittee, a 'Shield Group' responsible for reviewing intelligence on clandestine CBW trade and coordinating US responses, for performing initial reviews of potential violations of US CBW sanctions, and for reviewing CBW precursor and equipment export-licence applications. In his prepared statement Secretary Clarke says that an "inter-agency CBW sanctions working group has been established to evaluate intelligence and identify potentially sanctionable activity" since the President's executive order on sanctions of 16 November last [q.v.]. He says, too, that the US Government has been urging other Australia-Group members to adopt export controls analogous to those of the Enhanced Proliferation Control Initiative [see 7 Mar], adding: "We are also expanding Australia Group activities including creation of working groups and more frequent meetings."

He says that the State Department Bureau of Politico-Military Affairs has established a Special Commission Backstopping Support Office to assist implementation of UN Security Council Resolution 687 [see 3 Apr] in Iraq. {Prepared testimony}

23 April The US Congress is told by Assistant Secretary of the Army Susan Livingstone that the chemdemil program cannot be completed before July 1999 and that its total life-cycle cost estimates have now increased to \$6.5 billion. {Prepared testimony before the House Defense Appropriations Subcommittee as in ITA 29 Apr}

25 April In Iraq, at a press conference in Baghdad, Prime Minister Saadun Hamadi rejects US complaints that Iraq has underreported its stocks of CBW weapons in its recent declaration to the UN [see 18 Apr]. He says that Iraq has no biological weapons and that the

inventory of chemical weapons sent to the UN "is correct and precise." {NYT 26 Apr}

25 April The US Army convenes a public scoping meeting in Richmond, Kentucky, to aid its preparation of the Site-Specific Environmental Impact Statement it must file for the proposed chemdemil facility at Lexington Blue Grass Army Depot. {FedR 10 Apr}

27 April In Angola, a doctor at Moxico Central Hospital in Luena says that UNITA forces attacking the city [see 15 Apr] have been firing toxic shells which, after exploding, emit a whitish smoke causing respiratory and other problems. He says that the hospital has admitted some 180 people suffering the effects. {Luanda domestic service 27 and 28 Apr in FBIS-AFR 29 Apr}

2 May The Australian Ministry of Foreign Affairs and Trade announces that the director of its chemical and biological disarmament branch, Dr John Gee, is to head the Working Group on Chemical and Biological Weapons of the UN Special Commission mandated by the Kuwait-War ceasefire resolution [see 22 Apr]. Dr Gee is a career diplomat with a doctorate in chemistry from Oxford University, UK. {Australian Embassy, Washington, *Australia News Release*, 2 May; Australian High Commission, London, Australian Overseas Information Service, release dated 3 May}

6 May The clandestine radio station *Voice of Rebellious Iraq* says that the Iraqi government is dispersing its CBW weapons to several locations, particularly in the north of the country. {Voice of Rebellious Iraq 6 May in FBIS-NES 7 May}

7 May At the United Nations in New York, the Working Group on Chemical and Biological Weapons of the UN Special Commission [see 2 May] begins its work. Besides its Coordinator, Dr John Gee of Australia, the Group comprises Dr Paal Aas of Norway, Lt-Gen (ret) Ken Adachi of Japan, Professor Bryan Barrass of the UK, Professor Helmut Honig of Austria, Dr A J J Ooms of The Netherlands and Dr Miroslav Splino of Czechoslovakia, assisted by Dr Johan Santesson for the World Health Organization. The Group is joined by members of the Future Compliance Working Group, including Ron Cleminson of Canada, Dr Marjatta Rautio of Finland and its Coordinator, Peter von Butler of Germany, assisted by Lt-Col Jim Knapp of Canada. {S/22614}

8 May In the Russian Federation, at a meeting of the Supreme Soviet of the Mari Autonomous Republic, opposition is expressed to location of chemdemil facilities on the territory of the 13th District. {Moscow domestic service 8 May in BBC-SWB 10 May}

8 May In the UK House of Commons, the Defence Committee is told by Lt-General Sir Peter de la Billière, joint commander of British forces during the Kuwait War, that to his knowledge no Iraqi CW weapons had been recovered, apparently because they had not in fact been deployed to frontline Iraqi units [see 26 Feb and 6 Mar]. {FT 9 May}

8 May In the US Congress, the House Armed Services Committee completes its markup of the 1992 defense authorization bill. Citing the GAO study it had requested on the state of the Army's chemical defense program [see 16 Apr], it adds \$50 million to enable the Army to purchase Marine protective overgarments and \$15 million for the Marine Corps to expand its defensive chemical equipment program {House Armed Services Committee news release, 8 May}. The additional authorization of \$65 million is in Operations & Maintenance funds.

9 May In Brussels, unidentified NATO sources reportedly say that the United States is pressing for retention of chemical weapons in the Alliance's new post-Cold-War strategy, despite the opposition of many NATO member states. {Reuter as in CN 10 May}

10 May The US Army Armament, Munitions and Chemical Command awards a \$16.1 million contract to EAI Corporation of Abingdon, Maryland for a 54-month program to provide specialized R&D support to the CRDEC in support of US CW arms-control initiatives {DN 27 May}. EAI also announces plans to open a Chemical and Biological Warfare Arms Control Institute at its Abingdon headquarters {ASA Newsletter 6 Jun}.

13 May President Bush announces major changes in US policy on chemical weapons, as follows:

"The Gulf war has once again raised the specter of chemical weapons and demonstrated that unscrupulous regimes can and will threaten innocent populations with these weapons of terror so long as we permit them to exist. These stark events renew and reinforce my conviction, shared by responsible leaders around the world, that chemical weapons must be banned -- everywhere in the world.

"The world's best hope for this goal is the Chemical Weapons Convention now being negotiated by the Conference on Disarmament in Geneva. The United States is committed to the early, successful completion of this Convention and I am today announcing a number of steps we will take to accelerate the negotiations and achieve an effective chemical weapons ban as soon as possible. I hope this initiative also will spur other nations to commit themselves equally to this critical objective.

"I have instructed the United States negotiating team in Geneva to implement my decisions at the next session which begins May 14. To demonstrate the United States commitment to banning chemical weapons, we are formally forswearing the use of chemical weapons for any reason, including retaliation, against any state, effective when the convention enters into force, and will propose that all states follow suit. Further, the United States unconditionally commits itself to the destruction of all our stocks of chemical weapons within ten years of entry into force and will propose that all other states do likewise. We will offer technical assistance to others to do this efficiently and safely.

"In addition, we will call for setting a target date to conclude the Convention and recommend the Conference stay in continuous session if necessary to meet the target. The United States also will propose new and effective verification measures for inspecting sites suspected of producing or storing chemical weapons. To provide tangible benefits for those states that join the Convention and significant penalties for those that fail to support it, the United States will propose the Convention require parties to refuse to trade in chemical weapon-related materials with states that do not join in the Convention. The United States reaffirms that we will impose all appropriate sanctions in response to violations of the Convention, especially the use of chemical weapons.

"These steps can move the world significantly closer to the goal of a world free of chemical weapons. I call upon all other nations to join us in the serious and cooperative pursuit of this important goal."

A *Fact Sheet* issued by the White House to accompany this statement, specifies the "target date" as "completion of the CWC within 12 months." It also says that the United States "will formally declare its intention to become an original party to the CWC." On the offer of chemdemil technical assistance, it says: "We will:

- Create a Task Force comprised of US Government and private industry representatives to develop proposals on how the US can advise and assist states in CW destruction.

- Provide technical destruction assistance (e.g., visits to US destruction facilities, blueprints, and technical advice) to states parties that have CW [here denoting "chemical weapons"] located on their territory.

- Propose the creation of a CD Working Group on CW destruction and offer to provide US experts to it."

On the verification measures for suspect sites, it says: "We will call on the CD to adopt our position for challenge inspection of such sites." {The White House, Office of the Press Secretary, *Statement by the President on Chemical Weapons Initiative and Fact Sheet*. (Both texts are reprinted in CD/1077 of 23 May.)}

The policy shift, adumbrated for some time in the US press {*Newsweek* 29 Apr; WP 27 Apr & 14 May}, is portrayed rather widely as laying the groundwork for a soon-to-be-announced US plan for eliminating mass-destruction weapons and missiles from the Middle East {FT & NYT 14 May, DTel & IHT 15 May}.

15 May The US General Accounting Office issues an unclassified version of the report on *Chemical Weapons: Physical Security for the US Chemical Stockpile*, which it had issued on 14 March. The report notes that while the nine US chemical-weapon storage sites are "potentially vulnerable to a terrorist attack, no chemical sabotage or diversion attempts have been made at the storage sites in the past 5 years." Overall, the GAO finds that the storage sites comply with the Army's physical security standards. {GAO/NSIAD-91-200}

16 May In Geneva the CD reconvenes for its second session of the year.

16 May At the CD in Geneva, US Ambassador Stephen Ledogar reads a message from President Bush containing the substance of his recent policy statement on chemical weapons [see 13 May]. The ambassador goes on to present the more detailed position which the White House had outlined at the time of the statement, including the dropping of both the 2-percent proposal and the insistence on retaining a right of retaliation with chemical weapons. He urges others "to show flexibility in their positions and to make the same commitment toward accomplishing our common objectives." {CD/PV.591}

17 May In the CD Ad Hoc Committee, a cleaned-up version of the Schedules of Chemicals is distributed, the result of extensive consultations but still provisional, pending not least the outcome of the continuing deliberations in Group B on the control regime to be applied to the civil chemical industry [see 27 Mar]. Changes include the express exemptions of the pesticide Fonofos and certain dialkylaminoethanols from Schedule 2A and their inclusion in Schedule 3, and the shift of Agent BZ from Schedule 1 to Schedule 2B; and three nitrogen-mustard precursors are added to Schedule 3.

17 May The UN Secretary General submits to the Security Council for its approval the plan required under Resolution 687 for inspecting Iraqi CW items and facilities and for taking possession of the weapons {S/22614}. Iraq accepts the plan, thereby in effect guaranteeing the Commission's inspectors immediate access to any site they may choose {NYT 18 May}.

The submission by the Secretary-General states that the Special Commission is establishing a Field Operations Office in Bahrain and a Support Office in Baghdad. The submission reports a "continued exchange of communications" between the Special Commission and the Iraqi government for the purposes of clarifying and supplementing the information declared by Iraq about its weapons [see 18 Apr]. The new information thereby acquired both then and subsequently is said to have "raised considerably" the total tonnage of chemicals declared by Iraq {ASA Newsletter 6 Jun}, and to have confirmed that the declared "sarin" was actually a mixture of agents GB (sarin) and GF (cyclohexyl methylphosphonofluoridate), this being why Iraqi authorities had spoken of "binary sarin."

As to biological weapons, the Secretary-General reports that the Special Commission has asked Iraq, now that it has joined the BWC, to submit a declaration of data about BW-pertinent matters in accordance with the agreement reached at the meeting of experts established by the 2nd BWC Review Conference [see 15 Apr 87].

20 May The UN Special Commission decides to carry out an initial exploratory investigation of the Muthanna State Establishment in Iraq, the largest CW site referred to in the declaration of 18 April [q.v.], located near Samarra. The inspection, to be performed by some 18 inspectors plus support staff, is scheduled for 10-14 June. The Deputy Executive Chairman of the Special Commission, Robert Galucci, reportedly describes the projected Samarra inspection as

a "scouting mission." {ASA Newsletter 6 Jun}

21 May The US Army Program Manager for Chemical Demilitarization publishes its Final Environmental Impact Statement on the disposal of chemical agents and munitions stored at Anniston Army Depot, Alabama [see 14 Nov 90].

21-23 May The Australia Group meets in Paris, subsequently issuing its first-ever press communiqué, {Australia, Ministry of Foreign Affairs and Trade, news release, 24 May}. Members of the US delegation -- its leader, Deputy Assistant Secretary of State Elizabeth G Verville, and Acting Under Secretary of Commerce Joan M McEntee -- later speak to reporters about the meeting, saying that agreement was reached that all 20 participating governments will, by the end of the year, subject any of the 50 precursor chemicals on the Australia-Group list which they do not already control to export-licensing requirements, not just those precursors on the core list [see 11-13 Dec 90]. They reportedly say, too, that a similar agreement will be sought at the next meeting of the Group, in December, aimed at preventing the spread of biological weapons. {WP 31 May}

22 May In the United States, the outgoing Director of Central Intelligence, Judge Webster, says in a public address: "Twenty years ago, only five countries possessed chemical weapons. By the year 2000, as many as two dozen countries could have chemical and/or biological warfare capabilities" [see also 7 Mar]. {Prepared text}

22 May In Iraq, a team of IAEA inspectors conclude a 5-week visit, having located all of the highly enriched uranium believed to be in Iraq's possession, so unidentified US officials are reported as saying. UN Special Commission Chairman Rolf Ekéus tells reporters that the next round of UN inspections is to be launched from newly established headquarters in Bahrain in about two weeks time directed at chemical weapons [see 20 May]. {WP 23 May}

22 May In the US Congress, the Senate Foreign Relations Committee receives administration testimony on the President's new chemical-weapons initiative [see 13 May]. The Director of the US Arms Control & Disarmament Agency, Ronald Lehman, speaks also of the delay in submitting the US-USSR bilateral destruction agreement of June 1990 for Congressional approval, explaining that this is because the USSR is having difficulty in finalizing its chemdemil plan [see 4 Apr] {prepared statement}. CD Ambassador Stephen Ledogar indicates that Phase II of the US-Soviet bilateral verification experiment agreed in the September 1989 Wyoming Memorandum of Understanding may commence "as soon as the very beginning of 1992," signifying that multilateral agreement on the CWC would then be expected within a few months. He says that the next round of US-Soviet CW bilaterals is being delayed pending action by the Supreme Soviet on the chemdemil program, adding that "the Soviets unfortunately have been slow to respond to our offers of cooperation" {prepared statement}.

23 May Peru declares at the CD its intention to become an original signatory of the Chemical Weapons Convention. Its representative tells the conference, further, that the foreign ministry "is already taking steps to establish, at the appropriate time, the National Authority in conformity with Article VII" {CD/PV.592}. And he introduces a working paper on challenge inspection, proposing two clearly differentiated stages for such inspections {CD/1075}.

27 May From the Solomon Islands, a US Navy ship sets sail with

109 old 155mm mustard-gas shells bound for the chemdemil facilities on Johnston Atoll. The shells [see 31 Jul 90] had been found on Mbanika Island, where they had resisted local chemdemil efforts in 1988, and are part of the 12,000 US mustard-gas rounds sent out to the South Pacific during World War 2, many of which are still missing. {WSJ 28 May; prepared testimony of Susan Livingstone before a Senate Armed Services Subcommittee, 13 Jun}

29 May At the United Nations in New York, the five permanent members of the Security Council are considering a US-British draft resolution that would require Iraq to pay for the destruction (under Resolution 687) of its own weapons. {Reuter as in CN 30 May}

29 May President Bush, addressing the US Air Force Academy in Colorado Springs, puts forward his long-awaited Middle East arms-control initiative [see 13 May]. It has five main elements: on *supplier restraint*, calling on "the five major suppliers of conventional arms [Britain, China, France, the Soviet Union and the USA] to meet at senior levels in the near future to discuss the establishment of guidelines for restraints on destabilizing transfers of conventional arms, as well as weapons of mass destruction and associated technologies"; on *missiles*, proposing "a freeze on the acquisition, production, and testing of surface-to-surface missiles by states in the region with a view to the ultimate elimination of such missiles from their arsenals"; on *nuclear weapons*, supporting "the eventual creation of a regional nuclear weapon-free zone" and calling on regional states to "implement a verifiable ban on the production and acquisition

Chemical Industry Spurs Treaty Negotiation

On 25 June at the Conference on Disarmament, organizations representing chemical industry from North America, Europe, Japan and Australia offered a treaty verification proposal which would allow international inspectors to examine any commercial chemical manufacturing site for evidence of chemical weapons production. Industry officials also endorsed an "anytime, anywhere" system of inspections. The plan was submitted as a joint proposal of the US Chemical Manufacturers Association (CMA), the Canadian Chemical Producers Association, the Japan Chemical Industry Association, the Australian Chemical Industry Council and CEFIC, the European Council of Chemical Industry Federations which is made up of 14 European national trade associations including those from Germany, Britain, France and Italy. {CMA News Release, 25 Jun}

of weapons-usable nuclear material," to join the NPT, and to place all nuclear facilities under IAEA safeguards; on *chemical weapons*, calling for regional states "to commit to becoming original parties" to the CWC and "to institute confidence-building measures now by engaging in presignature implementation of appropriate CWC provisions"; and on *biological weapons*, calling for strengthening the "1972 Biological Weapons Convention through full implementation of existing BWC provisions and an improved mechanism for information exchange," and urging regional states to "adopt biological

weapons confidence-building measures.

Supplier-restraint guidelines are to be discussed at a conference of the five powers soon to be hosted by France. Other suppliers will then be brought into the discussions, a process that could be initiated, the President suggests, at the London summit of the Group of Seven, in July. {Office of the Press Secretary, *Fact Sheet on Middle East Arms Control Initiative*, 29 May}

30 May In the US House of Representatives, a Budget Committee task force receives testimony supportive of the proposal to establish a link between US aid to foreign governments and the willingness of those governments to support and eventually join the Chemical Weapons Convention [see also 1 Apr, Tokyo].

30 May Angola is admitted as a participating non-member of the CD, the 35th such participant in the 1991 session [see 31 Jan]. {CD/PV.593; CD/INF.26}

31 May In Israel, governmental officials comment to US Defense Secretary Dick Cheney, who is just ending an official visit, on President Bush's recent Middle East arms control initiative [see 29 May], reportedly saying that any agreement would have to include at least 17 Muslim nations regarded as potential threats to Israel -- nations stretching from Morocco to Pakistan. {IHT 1-2 Jun; DN 3 Jun}

Recent Publications

- Arnett, Eric H, Elizabeth J Kirk and W Thomas Wander, *Critical Choices: Setting Priorities in the Changing Security Environment*, Washington, DC: American Association for the Advancement of Science, 1991. See especially pp. 129-149 for "Chemical and Biological Weapons: Developments in the Kuwait Crisis and in Arms Control," with presentations by Seth Carus and Matthew Meselson.
- Badelt, Joachim, "Rhetorik statt Reform: Deutsche Rüstungsexporte und Novellierung der Ausfuhrbestimmungen," *Blätter für deutsche und internationale Politik*, May 1991, pp. 568-577.
- Bahl, Volker, "Das Wechselspiel zwischen dem Abzug der C-Waffen und der Modernisierung der C- und B-Waffen," *Wechselwirkung*, no. 47 (February 1991), pp. 12-17.
- Bhargava, Pushpa M, "Why should we be concerned about banning biological weapons?," *UNIDIR Newsletter*, vol. 4 no. 2 (June 1991), pp. 6-8.
- Black, S, B Morel and P Zapf, "Verification of the Chemical Convention," *Nature*, vol. 351 (13 June 1991), pp. 515-516.
- Burck, Gordon M, "Chemical weapons production technology and the conversion of civilian production," *Arms Control* vol. 11 no. 2 (September 1990), pp. 122-163.
- Carpenter, Will and Kyle Olson, "Chemical proliferation and disarmament: an industry perspective," *ASA Newsletter* [Portland, Maine: Applied Science and Analysis Inc] no. 24 (6 June 1991), pp. 3-5.
- Carus, W Seth, *The Poor Man's Atomic Bomb? Biological Weapons in the Middle East*, Washington, DC: The Washington Institute for Near East Policy [Policy Papers, no. 23], 1991, 71 pp.
- Chevrier, Marie Isabelle, "Verifying the unverifiable: lessons from the Biological Weapons Convention," *Politics and the Life Sciences*, vol. 9 no. 1 (August 1990), pp. 93-105.
- Chevrier, Marie Isabelle and Jessica Eve Stern, "Chemical and biological weapons in the Third World," *Boston College Third World Law Journal*, vol. 11 no. 1 (Winter 1991), pp. 45-81.
- Council for Responsible Genetics, Committee on the Military Use of Biological Research, *Statement for the Third Review Conference of the Biological Weapons Convention*, April 1991, 4 pp.
- Davis, Zachary S, "Non-proliferation regimes: a comparative analysis of policies to control the spread of nuclear, chemical and biological weapons and missiles," *CRS Report for Congress* [US Library of Congress: Congressional Research Service] 91-334 ENR, 1 April 1991, 50 pp.
- Dunn, Lewis A and James A Schear, "Combatting chemical weapons proliferation: the role of sanctions and assurances," *Henry L Stimson Center Occasional Paper*, no. 3, Washington DC, April 1991, 37 pp.
- Ezz, Esmat A, "The potential threat of biological and toxin weapons," *Disarmament*, vol. XIV no. 2 (1991), pp. 95-103.
- Freeman, Shirley E, "Present state of control of chemical and biological weapons," *Medicine and War*, vol. 7 (1991) no. 1, pp. 16-20.
- Garcia Moritán, Roberto, "The Third Review Conference of the Biological Weapons Convention, Opinion," *UNIDIR Newsletter*, vol. 4 no. 2 (June 1991), pp. 3-5.
- Geissler, Erhard and Robert H Haynes (editors), *Prevention of a Biological and Toxin Arms Race and the Responsibility of Scientists*, Akademie-Verlag Berlin, 1991, 517 pp.
- Geissler, Erhard, "Strengthening the Biological Weapons Convention," *Disarmament*, vol. XIV no. 2 (1991), pp. 104-118.
- Goldblat, Jozef and Thomas Bernauer, "The third review of the Biological Weapons Convention: Issues and proposals," *UNIDIR Research Papers* [New York: United Nations], no. 9 (April 1991), 79 pp.
- Goldblat, Jozef and Thomas Bernauer, "Proposals for strengthening the Biological Weapons Convention," *Bulletin of Peace Proposals*, vol. 22 no. 2 (June 1991), pp. 235-240.
- Harding, Air Chief Marshal Sir Peter [UK RAF Chief of Staff], "Air operations in a chemical warfare environment," *NATO's Sixteen Nations*, vol. 36 no. 1 (February 1991), pp. 74-77.
- Korn, Peter, "The persisting poison: Agent Orange in Vietnam," *The Nation*, 8 April 1991, pp. 440-446.
- Krause, Joachim, "The current state of the Geneva negotiations on the Chemical Weapons Convention," *Stiftung Wissenschaft und Politik, Forschungsinstitut für internationale Politik und Sicherheit*, report no. SWP-IP 2698, May 1991, 26 pp.
- Laurin, Frederik, "Scandinavia's underwater time bomb" [World War 2 CW weapons dumped in the Baltic], *Bulletin of the Atomic Scientists*, March 1991, pp. 10-15.
- [Ledogar, Stephen J], "Interview: Ambassador Stephen J Ledogar: Closing in on a chemical weapons ban," *Arms Control Today*, vol. 21 no. 4 (May 1991), pp. 3-7.
- Livingstone, Neil C, "Iraq's intentional omission," *Sea Power*, June 1991, pp. 29-30.
- Lohs, Karlheinz, "Zur Toxikologie altlastenrelevanter chemischer Kampfstoffe," *Abfallwirtschafts Journal*, vol. 3 (1991) no. 1/2, pp. 75-78.
- Lohs, Karlheinz, "Rüstungsalten: Militär-chemische Altlasten in der (ehemaligen) DDR: Status quo, Rückblick und Ausblick," *Umweltwissenschaften und Schadstoff-Forschung: Zeitschrift für Umweltchemie und Ökotoxikologie*, vol. 3 (1991) no. 2, pp. 74-75.
- Lundin, S J (ed.), *Views on Possible Verification measures for the Biological Weapons Convention* [SIPRI Chemical & Biological Studies no. 12], Oxford: Oxford University Press, 1991, 124 pp.
- Meselson, Matthew, "Armi chimiche e misure di protezione," *Giano*, 1990 no. 6, pp. 110-121.
- [Meselson, Matthew], "The science and politics of chemical warfare: an interview with Matthew Meselson," *Harvard/Radcliffe Science Review*, Winter 1991, pp. 8-14.
- Meselson, Matthew, "The myth of chemical superweapons," *Bulletin of the Atomic Scientists*, vol. 47 no. 3, pp. 12-15.
- Meselson, Matthew, "Implementing the Biological Weapons Convention of 1972," *UNIDIR Newsletter*, vol. 4 no. 2 (June 1991), pp. 10-13.

Nass, Meryl, "The labyrinth of biological defense," *The PSR Quarterly*, vol. 1 no. 1 (March 1991), pp. 24-30.

Norway, Royal Ministry of Foreign Affairs, *Research Report on Verification of a Chemical Weapons Convention: Development of Procedures for Verification of Alleged Use of Chemical Warfare Agents. Part X: Application of Procedures after a Simulated Chemical Attack on an Air Base*, Oslo, May 1990, 32 pp.

Rosenberg, Barbara Hatch, "The next step: A biological verification regime," *Disarmament*, vol. XIV no. 2 (1991), pp. 119-146.

Saghafinia, Amir, "Emergency treatment of chemical weapons casualties - field experiences," *ASA Newsletter*, no. 24 (June 1991), pp. 1, 12-13.

Siegel, Lenny, *Chemical Weapons Disposal: The Threat at Home*, Boston, MA: National Toxics Campaign Fund, June 1991, 23 pp.

Smith, James, "Chemical weapons proliferation," *Jane's Soviet Intelligence Review*, vol. 3 no. 5 (May 1991), pp. 194-198.

Smithson, Amy and Michael Krepon, "Strengthening the Chemical Weapons Convention through aerial inspections," *Henry L Stimson Center Occasional Paper*, no. 4, Washington, April 1991, 35 pp.

Tanzman, Edward A and Barry Kellman, "Legal implementation of the multilateral Chemical Weapons Convention: Integrating international security with the Constitution," *New York University Journal of International Law and Politics*, vol. 22 no. 3 (Spring 1990), pp. 475-518.

ter Haar, Barend, "The state of the Biological Weapons Convention," *Disarmament*, vol. XIV no. 2 (1991), pp. 147-167.

ter Haar, Barend, "Indirect verification: The example of the Chemical Weapons Convention," *UNIDIR Newsletter*, vol. 4 no. 2 (June 1991), pp. 8-10.

United States of America, Department of the Army, Program Manager for Chemical Demilitarization, *Disposal of Chemical Agents and Munitions*

Stored at Anniston Army Depot, Anniston, Alabama: Final Environmental Impact Statement, Aberdeen Proving Ground, MD, May 1991.

United States of America, General Accounting Office, Report to Congressional requesters, *Chemical Warfare: Soldiers Inadequately Equipped and Trained to Conduct Chemical Operations*, GAO/NSIAD-91-197, May 1991, 43 pp.

United States of America, House of Representatives, Committee on Foreign Affairs, Subcommittee on Arms Control, International Security and Science, Hearings, 17 May and 11 July 1990, *Proliferation and Arms Control*, 404 pp.

Wellmann, Arend, "Wer hat den Irak aufgerüstet? Eine vorläufige Verursacher- und Schadensbilanz," *Blätter für deutsche und internationale Politik*, March 1991.

Wellmann, Arend, "Weiterverbreitung chemischer Waffen: zum Beispiel Irak: Beschaffung und Einsatz chemischer Waffen durch den Irak 1980-1990," *Arbeitspapiere der Berghof-Stiftung für Konfliktforschung* [Berlin], no. 44/1991, 52 pp.

Wiegele, Thomas C, *Biotechnology and International Relations: The Political Dimensions*, Gainesville, FL: University of Florida Press, 1991, 216 pp.

Wills, Peter, "Von Deutschland zum Johnston-Atoll und von dort zum Persischen Golf," *Psychologie und Frieden*, no. 5a/1990, pp. 22-25.

Wills, Peter, "US Chemical Warfare - The Pacific Connection," *Peacelink*, May 1991, pp. 22-25.

Wolfbeis, Otto S., Wolfgang Trettnak, Michael Hofer, Franz Reiningger and Ernst Zinterl, "Detection of inhibitors of the enzyme acetyl cholinesterase over long distances using optical fibers," final project report from the Austrian Scientific Council for the Implementation of the Chemical Weapons Convention, distributed as CD/1076 of 21 May 1991.

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