CHEMICAL WEAPONS CONVENTION BULLETIN

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THE CHEMICAL WEAPONS CONVENTION: SOME PARTICULAR CONCERNS OF DEVELOPING COUNTRIES

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As negotiations in Geneva on the details of a Chemical Weapons Convention continue at an impressive pace, many developing countries feel that, despite their abhorrence of weapons of mass destruction, their particular concerns about the underlying concepts of the Convention are not being fully reflected in the negotiations. This is serious, for developing countries have a legitimate interest in the subject, if only because the great majority of conflicts in the post-war period have taken place in the Third World. In the case of chemical warfare more specifically, whatever equilibrium is created by chemical deterrence elsewhere is not only absent in most developing regions of the world, but this situation is superimposed on latent or unresolved conflicts which can easily erupt into actual warfare. Any tendency by the few developed countries to marginalize or to ignore the specific concerns of the vast majority of developing countries would not only be unworthy of the democratic ideals to which we all strive, but could also jeopardize the chances of a Convention, the success of which will depend largely on universal adherence.

The greatest fear of the developing countries is that the Convention is to be yet another "non-proliferation" instrument, creating two classes of states, one consisting of the "responsible" developed countries who already have the capacity and the stockpiles, and whose interests would somehow be legitimized, and the other consisting of those "irresponsible" developing countries who do not have either the capacity or the stockpiles, and who are merely being asked to acquiesce in this discrimination. Instead of a Convention which aims at the complete and total elimination of chemical weapons, it could become a thinly disguised tool to prevent the "spread" of chemical weapons. Developing countries stand squarely opposed to this, and to all *ad hoc*, stop-gap, partial or discriminatory measures, such as export controls or chemical weapons free zones, which aim at selective fragments of a global problem. A discriminatory approach would, therefore, undermine the negotiations and delay the conclusion of a comprehensive convention.

A linked fear is that the chemical weapons prohibition regime will somehow be misused to deny the access of developing countries to peaceful and normal chemical technology. The risk is real, because of the intimate relationship which exists between chemical weapons production techniques, and peaceful industrial chemicals production techniques. In a world where the new frontiers are essentially technological, and where difficulties in the import of technology are among the most acute problems of developing countries, this could well become an issue which divides the actors in the current negotiations along opposite sides of the table.

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Some developing countries, particularly in the Middle East, also feel quite strongly that while they are being asked to give up a chemical weapons option, no equivalent pressure is being applied on their neighbor to give up its own nuclear option. Mass destruction leads to the same consequences, by whatever means it is executed. In a regional context where tensions have now existed for more than two generations, the link appears obvious to these developing countries, and sweeping it under the carpet will not make it disappear.

Another significant concern of several developing countries is in the concept of what is described as protection and assistance in the case of use or threat of use of chemical weapons. The strength of an interdiction regime lies in its system of enforcement and sanctions. The entry into force of a Chemical Weapons Convention will not by itself make chemical weapons vanish. The goal of universal adherence will only be achieved gradually and over a period of time. As long as some countries with a chemical weapons capability remain outside the Convention, those which have given up the option would continue to feel threatened and the prohibition regime would remain incomplete and fragile. It is, therefore, necessary that the Convention should contain mandatory provisions on assistance in protective measures for those who are threatened by or are subjected to a chemical weapons attack. These provisions would call for inevitable financial outlays. So far almost all developed countries have shied away from facing these financial consequences.

A final and important concern of developing countries is that the developed countries will somehow seek to secure more than their due share of seats on the future Executive Council of the Convention, either by asking for permanent seats for the permanent members of the UN Security Council, or by advancing principles like extra weightage for countries with large chemical industries. In all likelihood, the need for a proper representative character of the Executive Council will require a relatively large membership, and moves to restrict seats in order to make the Council more exclusive in nature could also well become a divisive issue.

Despite these fundamental concerns, which will no doubt have to be fully taken into account, developing countries remain hopeful about the early conclusion of and universal adherence to a comprehensive Convention, placing a total and verifiable ban on chemical weapons. Mankind will then have taken a major step in its quest for general and complete disarmament by outlawing, at one go, an entire category of weapons of mass destruction.

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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 full citations of sources. For access to it, apply to Julian Perry Robinson at SPRU, University of Sussex, Brighton, BN1 9RF, England.

4 December 1988 What appears to be a press leak of a secret State Department report says that "West German pharmaceutial companies [unidentified] had provided hundreds of tons of chemical precursors to allow production [of chemical weapons] to begin at Rabta" in Libya. {STel 4 Dec}

5 December The Assembly of the Western European Union considers a report from one of its committees which includes a lengthy account of the use of CW weapons in the Gulf War; it had concluded: "Iraq's use of lethal gas ... seems to have had only slight tactical effects but constituted a further demoralizing factor for its enemy" {WEU 1162, 10 Nov}. The Assembly votes to condemn the "use of chemical weapons by Iraq during the war" and to recommend that the WEU Council "ask the [WEU] Agency for the Control of Armaments for a report on the means of verifying that chemical weapons are not produced or stockpiled" {A/WEU 9340 PV 7}.

5 December Filing suit in the US District Court for the District of Columbia, the Foundation on Economic Trends seeks a halt to all US CW-weapons research and production, claiming that the programs violate the National Environmental Policy Act. {NYT 6 Dec, *Cleveland Plain Dealer* 7 Dec}

7 December The Federal German government transmits to the Bundestag an interim report on the state of the investigations by the Darmstadt Public Prosecutor into the firms accused of having illegally supplied Iraq with chemicals and equipment for making CW weapons [see 1 Dec 87]. The report is published on 20 Dec. It names five firms: WET GmbH of Hamburg, Karl Kolb GmbH & Co KG of Dreieich, Pilot Plant GmbH of Dreieich, Preussag AG of Hanover and Heberger Bau GmbH of Schifferstadt. {DB Drucksache 11/3762, 20 Dec}

7 December In Geneva, within the framework of the open-ended consultations of the CD Ad Hoc Committee [see 29 Nov], a meeting is convened to review progress in the National Trial Inspections [see 16 Aug]. The delegations of Australia, Belgium, Finland, the FRG, the GDR, Hungary, Italy, Japan, the Netherlands, the Soviet Union, Sweden, Switzerland, the UK and the US report either that they had already conducted their trials or -- the majority -- that they were engaged in preparing their trials. {CD/CW/WP.217}

7 December The UN General Assembly unanimously adopts a resolution calling upon the Secretary-General "to continue his efforts [see 3 Nov] to develop further technical guidelines and procedures" for investigating CBW-use reports. {A/RES/43/74A}

7 December CW arms control is reportedly prominent during the lunchtime discussion between President Reagan, President Gorbachev and President-elect Bush in New York. {NYT 8 Dec}

8 December In the FRG, the Bundestag debates CW issues. It learns that preparations for the withdrawal from Federal territory of the US CW stockpile have started; that there are close consultations on the matter between the US and Federal governments; that the Federal government has established a specific working group which has satisfied itself that the weapons are in a fit state to be moved; that the withdrawal will be conducted in full conformity with German law and safety standards; and that the weapons will be destroyed on United States territory, in a pilot plant. Foreign-Office Minister Schäfer reaffirms 1992 as the date for completion of the withdrawal, stating that, in peacetime, there will be no replacement of the stocks by binary munitions. {DB [Official Report] 8 Dec, pp 8536-46}

8-9 December The North Atlantic Council meets in ministerial session in Brussels. Its communiqué includes a strong endorsement of the projected Paris Conference [see 21 Oct] and of the chemical treaty negotiations at the CD in Geneva. It says, further: "In the perspective of a chemical weapons ban, we also underline the importance of stringent controls on the export of commodities related to chemical weapons production. Such a ban is all the more imperative as a priority at a time of reports of use of these weapons against civilians and continuing proliferation in various parts of the world." {*NATO's Sixteen Nations*, Dec 88 - Jan 89, pp 84-5}

12-13 December The Australia Group meets in Paris. Agreement is reached to add a ninth chemical to the list of those whose export all 19 member-countries have undertaken to control; and the chemicals on the warning list are increased from 32 to 35. {Bericht der Bundesregierung an den Deutschen Bundestag entsprechend seiner Entschliessung vom 18.1.1989, 15 Feb 89, p 57}

The 8 chemicals on the basic Australia-Group control list are thiodiglycol, phosphoryl chloride, phosphorus trichloride, dimethyl phosphite, trimethyl phosphite, dimethyl methylphosphonate, methylphosphonyl dichloride and methylphosphonyl difluoride. The new addition is thionyl chloride.

15 December In Geneva, the CD Ad Hoc Committee on Chemical Weapons ends its open-ended consultations [see 29 Nov] preparing for its resumption of work on 17 Jan. These intersessional efforts are concentrating on four subjects, in addition to the preparatory work for the planned program of trial inspections in the civil chemical industry [see 7 Dec]: ways to ensure undiminished security during the 10-year period in which CW weapons and facilities are being destroyed; procedures to protect confidential information unrelated to CW during inspections; the possibility of assistance to countries against which CW has been used or threatened; and detailed guidelines for inspectors. {*Arms Control Update*, no 10 (Dec 88), p 7}

15 December In Geneva, the 10th round of US-Soviet bilateral discussions of CW negotiating issues [see 29 Nov] comes to an end.

16 December In Bern, the fourth round of US-Soviet consultations on preventing the spread of chemical weapons is held. The Soviet delegation is headed by USSR CD Ambassador Yuri Nazarkin; the US delegation by Deputy Assistant Secretary of State J A Schlossberg. {Tass 16 Dec in FBIS-SOV 19 Dec}

21 December In a television interview to be broadcast the following day, President Reagan responds as follows when asked if military action might be taken against the reported CW-weapons factory in Libya [see 25 Oct]: "Well, let me say that's a decision that

has not been made yet, we're in communication with our allies and with NATO forces and all, and we're watching very closely that situation but even if I had made a decision I couldn't ...[sentence uncompleted]." {WP 22 Dec}

The possibility of a US attack on the factory at Rabta [see 4 Dec], was then being aired in the US press {WP 17 Dec}, where there was speculation that Libya might supply CW weapons to terrorists {WP 19 Dec}. Thus, on the day previously, the US ambassador-at-large for counterterrorism, Paul Bremer, had been quoted in the press as follows: "There is no evidence that the Libyans have exercised any self-restraint on themselves. The fact that you've got the Libyans with a chemical weapons capability, the historic ties and the propensity to turn heavy-duty stuff over to terrorists makes it a concern-raising situation" {AP as in BS 20 Dec}.

22 December In the FRG, according to a public disclosure 4 weeks later by the Federal Government, a team of US experts visits Bonn to brief Federal agencies about US findings on the character of the chemical plant at Rabta in Libya [see 21 Dec] and on the involvement of German firms in its construction [see 15 Nov]; but concrete evidence of the latter reportedly is not presented {Wolfgang Schäuble in Bundestag statement 18 Jan 89}. Asked whether they would be willing to testify against the firms in German courts, the US team say they will provide an answer by mid-Jan. {Bericht der Bundesregierung an den Deutschen Bundestag entsprechend seiner Entschliessung vom 18.1.1989, 15 Feb 89, p 32}

25 December The official Iraqi news agency issues a denial of a recent Egyptian report that Sudanese armed forces had acquired CW weapons from Iraq to use against separatist forces in southern Sudan. {INA 25 Dec in FBIS-NES 27 Dec}

26 December An interview is published in Tunisia in which the Libyan ambassador says that press and experts could visit the factory at Rabta at its opening within the next three months. {Ind 27 Dec}

The factory is visited this day by the Algerian Minister of Public Health, who was later reported to have "familiarized himself there with the ... production lines which will produce 50 medical drugs." {Voice of the Greater Arab Homeland 27 Dec in FBIS-NES 28 Dec}

The Syrian Minister of Health and the Secretary-General of the Association of Arab Pharmacists visit the factory six days later. {JANA 4 Jan 89 in FBIS-NES 5 Jan}

26 December At the request of Libya, an extraordinary session of the Council of the Arab League convenes in Tunis to discuss the threat of US attacks on the Rabta chemical plant [see 21 Dec] and to "adopt a united Arab stance thereon" {INA 25 Dec in FBIS-NES 27 Dec, AP as in BS 26 Dec}. A communiqué from the meeting says that any attack on the plant would seriously harm Arab-American relations {AP as in JC 30 Dec}.

27 December The Soviet National Trial inspection [see 7 Dec] takes place at the Sintez Production Amalgamation chemical plant in Dzerzhinsk, Gorky region. {TASS in FBIS-SOV 29 Dec}

28 December An interview is published in which USSR Deputy Foreign Minister Viktor Karpov comments at length on the CW armament and disarmament policies of the USSR. On Soviet stocks, he confirms the 50,000 agent-tonnes figure published by the USSR Foreign Ministry one year previously [see 26 Dec 87], and states that Soviet production had "continued until the Spring of last year." {*Izvestiya* 28 Dec in FBIS-SOV 3 Jan 89}

30 December The Defense Ministry of South Korea, in an overview report on South and North Korean military forces, states that North Korea has six storage sites for the chemical weapons which it is producing in eight plants. {AP as in IHT 31 Dec 88 - 1 Jan 89}

30 December The US Government rejects a Libyan offer conveyed by the Italian Government during the preceding week to allow international inspection of the Rabta factory {NYT 31 Dec, *La Republica* 3 Jan in FBIS-WEU 6 Jan 89}. State Department deputy spokesperson Phyllis Oakley says: "A one-time inspection could not be conclusive in this regard. A CW plant could easily be modified to appear as a legitimate industrial chemical plant such as a pharmaceutical or fertilizer factory. All traces of chemical weapon production could be erased from a plant on extremely short notice" {AP as in WP 31 Dec}.

31 December In Canada, the Chairman of the Board of the Canadian Institute for International Peace and Security, William Barton, submits the report which had been commissioned from him by the Defence Minister [see 14 Jun 88]. {*Research, Development and Training in Chemical and Biological Defence within the Department of National Defence and the Canadian Forces*, Ottawa: Canadian Government Publishing Centre, 1989}

1 January 1989 In what proves to be the start of a new series of leaks [see 14 Sep] from unidentified US Government sources about the Libyan factory at Rabta, the West-German firm Imhausen-Chemie GmbH of Lahr (Baden) is named by the *New York Times* as having played a central role in the design of the alleged CW weapons plant, starting in 1985. The firm is said to have provided technical advisers as well, and to have contracted with other concerns for the requisite construction materials and services. Former Deputy Director of Central Intelligence Robert Gates had reportedly stated earlier that the plant had been built with the help of "nearly a dozen nations, East and West," which, however, he had not identified. Described as "poised to begin full-scale production," the plant is said to have a potential output of 10-40 tons of chemical per day, about half mustard gas and half sarin nerve gas. The report states further that, since August 1988, there had been intense US "diplomatic activity aimed at forcing the Western companies out of the project." {NYT 1 Jan}

1-3 January Federal German authorities, reacting to the *New York Times* report on Rabta [see 1 Jan], say that Imhausen-Chemie is already under investigation, as are other, unidentified, West-German firms {NYT 3 Jan}. Assisted by Customs authorities, regional offices of the Finance and Economics Ministries were auditing Imhausen for possible violation of the Foreign Trade and Payments Law {SZ in FBIS-WEU 3 Jan}. But there was no evidence of violation, according to the cognizant Public Prosecutor; and on 5 Jan the Freiburg Finance Directorate would announce that the results of its investigation "have yielded no reason for suspicion of a criminal act through illegal exports" {FR, IHT 6 Jan}.

Federal Government spokesman Norbert Schäfer says that, following Cabinet discussion on 20 December, Chancellor Kohl had ordered the establishment of a commission to study the possible tightening of Federal export laws. {NYT 3 Jan}

The absence of any apparent action by the Federal Government against the alleged Libyan exports despite the evidence reportedly provided by both foreign (US and British) and Federal intelligence agencies receives much adverse comment in the US press, and an acrimonious phase in US-German relations sets in. {NYT 3 Jan, DieW 12 Jan in FBIS-WEU 13 Jan}

4 January Two Libyan fighter aircraft are shot down by aircraft from a US carrier in international waters off the Libyan coast. US Defense Secretary Frank Carlucci says that the US Sixth Fleet operations concerned "have no connection whatsoever with Libya's newly constructed chemical facility." {NYT 5 Jan}

4 January An unattributed report in the West-German press states that the building of the Rabta plant had been organized from London by an Iraqi, Ihsan Barbouti, and that, in addition to West German firms, firms from Austria, East Germany, Japan, South Korea and Switzerland had also participated in the construction. The

report gives no source for its information {DieW in FBIS-WEU 4 Jan}. An unidentified US official states that the naming of Barbouti was correct {NYT 5 Jan}.

4 January A Foreign-Office statement says that the British Government has "independent information" that Libya has a "very large" plant and that "there can be no doubt that it is intended for chemical weapons production" {Press Association 4 Jan in FBIS-WEU 5 Jan, DTel 5 Jan}. Later, Parliament is told by the Government: "We have firm evidence that the Rabta plant is close to achieving the capability to produce chemical weapon agents including sarin" {HansC 13 Jan}.

4 January Israeli Deputy Foreign Minister Binyamin Netanyahu, speaking in a Knesset debate, says that the "chemical weapons epidemic" must be stopped by a powerful drive made up of political and other measures. "The State of Israel is about to take a series of measures. I will not specify the steps that will be taken by the defence establishment, which is following these developments very closely. The Foreign Minister's meetings will include talks with the foreign ministers of some states which, according to reports that we are now examining, are allegedly supplying the raw materials." {IDF radio in FBIS-NES 4 Jan}

4 January Swiss authorities say they have no reason to take action against the two companies identified to them by US officials in December as involved in the Rabta project, for there was no applicable Swiss law. One of the companies was an Imhausen subsidiary; the other was named as Ihsan Barbouti International. {Deutschlandfunk 4 Jan and Berne international service in FBIS-WEU 5 Jan}

4 January Secretary of State George Shultz is asked during a press interview whether it would be a matter of weeks or months before Libyan CW-weapons production could start at Rabta. He responds: "If we can be successful in shutting off from them the expertise they need, it will take them quite a bit longer. That's why we're making such a big stew about it." {WP 5 Jan}

5 January In Prague, the Czechoslovak government publishes a statement which reaffirms that Czechoslovakia does not possess, manufacture or stockpile on its territory any chemical weapons; that it does not own facilities for their development and production; and that all its scientific research in this field is oriented exclusively towards protection against the effects of chemical weapons and other peaceful goals. {CD/878, CD/PV.488}

6 January In Pirmasens, FRG, three of the demonstrators against continued US storage of CW weapons on German soil [see 29 June 1988] are found guilty of *Nötigung* and fined 20-30 days income; 175 other such cases are still pending. {FR 7 Jan}

6 January The Foreign Minister of Turkey, Mesut Yilmaz, says at a press conference that there are no chemical weapons in Turkey and that Turkey has no plans to manufacture any. {Ankara domestic radio 6 Jan in FBIS-WEU 10 Jan}

7 January In Libya, more than a hundred journalists are taken to visit, at dusk, the outside of the chemical factory at Rabta. {BG 8 Jan, Stern 12 Jan}

7 January Israeli Deputy Foreign Minister Netanyahu is asked in London by a British television reporter whether Israel possesses chemical weapons. He responds: "No, we do not. We ourselves are very, very strict about the non-use of this weapon and not allowing it to proliferate into our area" {Jerusalem radio 7 Jan in FBIS-NES 9 Jan}. When asked the same question two days later at the Paris Conference, Foreign Minister Arens would reply: "It is essential to focus on countries which have used chemical weaponry. Israel will take the necessary steps to defend itself" {WT 10 Jan}.

7 January The Paris Conference begins [see 21 Oct].

7 January Meeting during the Paris Conference, FRG Foreign Minister Genscher and Secretary of State George Shultz agree to a bilateral meeting of experts on the problem of CW proliferation. There is to be a session in Washington next week. {DPA 7 Jan in FBIS-WEU 9 Jan}

7 January In the course of his speech at the Paris Conference, Secretary of State George Shultz says: "When Vice President Bush, on behalf of President Reagan, tabled the 1984 draft treaty in Geneva, he said that a comprehensive ban on chemical wea-

GLOSSARY OF ABBREVIATIONS FOR NEWS CHRONOLOGY

ACR	*Arms Control Reporter*	DPA	Deutsche Presse Agentur	KZ	*Krasnaya Zvezda*
AFP	Agence France Press	DTel	*Daily Telegraph* (London)	LAT	*Los Angeles Times*
AN	Atlantic News (Brussels)	FAZ	*Frankfurter Allgemeine Zeitung*	NAC	*Notes on Arms Control* (UK Foreign & Comnwlth. Office)
AP	Associated Press	FBIS	Foreign Broadcast Information Service (Washington)		
BG	*Boston Globe*	FR	*Frankfurter Rundschau*	Nat	*Nature*
BS	*Baltimore Sun*	FT	*Financial Times* (London)	NW	*Newsweek*
BusW	*Business Week*	G	*Guardian* (London)	NYT	*New York Times*
C&EN	*Chemical & Engineering News*	HansC	*Hansard* (Commons)	NZZ	*Neue Zurcher Zeitung*
CBW	Chemical/biological warfare	HASC	House Armed Services Committee	Obs	*Observer* (London)
CD	Conference on Disarmament			Sci	*Science*
CD/	CD document series	HC	*House of Commons Papers*	St	*Stern* (Hamburg)
CR	*Congressional Record*	IHT	*International Herald Tribune*	STel	*Sunday Telegraph* (London)
CSM	*Christian Science Monitor*	INA	Iraq News Agency (Baghdad)	SZ	*Suddeutsche Zeitung*
CW	Chemical warfare	Ind	*Independent* (London)	TL	*Times* (London)
CWC	The projected Chemical Weapons Convention	JANA	Jamahiriyah News Agency (Tripoli)	TZ	*Tageszeitung* (West Berlin)
DB	*Deutscher Bundestag*	JC	*Journal of Commerce*	UN	United Nations
DerS	*Der Spiegel*	JDW	*Jane's Defence Weekly*	WP	*Washington Post*
DieW	*Die Welt*	JP	*Jerusalem Post*	WT	*Washington Times*
DN	*Detroit News*			WSJ	*Wall Street Journal*

pons cannot work unless states are prepared to 'commit themselves to a new but absolutely necessary degree of openness' -- 'a new way of doing business.' But however formidable the challenge, the world community should not underestimate the United States' determination to overcome those problems and put an effective treaty into force. Recently, President-elect Bush has declared that one of his highest priorities will be to deal with what he appropriately calls 'this terrible scourge'." {Official text}

8 January Soviet Foreign Minister Shevardnadze says at the Paris Conference that the USSR will "shortly complete building work on a facility to destroy chemical weapons and at that facility we shall immediately begin eliminating our stocks of such weapons. And we shall begin doing this even before the Convention is concluded" {Official text}. The destruction is to commence on an experimental basis, the chief Soviet disarmament official, Deputy Foreign Minister Viktor Karpov, says later; how fast it proceeds is to depend on progress towards a worldwide ban on production {*Izvestiya* in FBIS-SOV 12 Jan}. USSR CD Ambassador Yuri Nazarkin, also on the Soviet delegation to the Paris Conference, says that the USSR does not intend to destroy its entire stockpile prior to conclusion of the treaty {*Trud* in FBIS-SOV 13 Jan}.

During his speech the Foreign Minister develops a theme which he had first stated in public the previous July [see 25 Jul 88]: "Over the past two years, our position has evolved in a radical way from manufacturing chemical weapons to abandoning their production altogether, from hushing up data on the existing stockpiles to publishing such data, from seeking to protect chemical production and storage facilities from the eyes of others to recognizing the concept of comprehensive verification and inviting foreign observers to watch the elimination of chemical weapons. And should anyone say to us that we waited too long before stopping the production of chemical weapons and imposing other prohibitions on them, we would say: yes, we did wait too long" {NYT 9 Jan}. He continues: "But having taken the political decision, having made the choice, we follow it unswervingly, quickly making up for time lost over the years and reaching unprecedented levels of openness. Openness is an indicator of sincerity of a country's intention to march in step with the world community. Openness is the main prerequisite of a real and verifiable process of disarmament ...."

A later part of his speech concerns ways forward for the CWC, stating that the Soviet Union is ready to do all it can for conclusion of the treaty in 1989. He declares the USSR's "intention to be among the initial signatories of the convention." He affirms Soviet acceptance of the idea of open-invitation challenge inspections "on the understanding that inspectors will be given access to any sites and facilities for verification without any restrictions, with the exception of living quarters." He proposes that a session of the CD at foreign-minister level 'be convened for a coordination of the Convention at the final stage of its working out." {Official text}

8 January The Foreign Minister of Libya, Jadalla Azouz Ettalhi, interviewed on the CBS News program Face the Nation, says: "I don't think our know-how will enable us, even if we decided to do so, to produce chemical weapons in the very near future. We have never had a plan to produce chemical weapons .... We have not the intention. We have no plan for the time being." {AP as in NYT 9 Jan}

8-9 January In the public, plenary session of the Paris Conference, the representatives of Iraq and other Arab states say that a call for a comprehensive ban on CW weapons should be linked to a similar stand on nuclear weapons in view of the reported Israeli possession of nuclear weapons {NYT 9 Jan}. Egyptian Foreign Minister Esmet Abdel-Maguid, for example, reportedly says: "Any progress on banning chemical weapons is tied to the conclusion of a parallel ban on nuclear arms" {WT 9 Jan}. A similar view is expressed by the Foreign Minister of Romania quoting a recent statement by President Ceausescu {Agerpres 9 Jan in FBIS-EEU 10 Jan}. It remains to be seen how exactly this "linkage" issue will be reflected in the Final Declaration.

Indian Foreign Minister Natwar Singh says his country could not accept a ban on the export of substances required for making chemical weapons since this would favor "certain countries" with "vast stocks of chemical arms." Opposition to new export controls is expressed by other Third World delegations. {ACR p 704.B.335-6}

9 January In Bonn, unidentified West German officials make public the names of four other West-German firms identified by the US Government as participants in the Rabta project [see 1-3 Jan]. They are, in addition to Imhausen-Chemie GmbH, Preussag AG of Hanover, Pilot Plant GmbH of Dreieich, Pen Tsao Materia Medica Center Ltd of Hamburg and Ihsan Barbouti International of Frankfurt. The officials say the names of the five companies had been disclosed to Chancellor Helmut Kohl on 15 Nov [q.v.], during his visit to Washington. {WP 10 Jan}

9 January In the United States, the President's Budget for 1990, released today, seeks $85.4 million for production of two types of binary CW munition (the 155mm artillery GB2 projectile and the Bigeye 500-lb VX2 aircraft spraybomb) and for full-scale development of a third type. {G 10 Jan}

9 January *Newsweek* publishes excerpts from an interview with President-elect George Bush. On banning CW weapons, he had said: "It's going to take a full-court press. It's going to take principled, moral leadership from not only the major powers, but from a lot of the Third World countries. But I really think world opinion is on the side of banishing chemical and biological weapons. [Otherwise] you face the concept of the "poor man's atomic bomb," where military considerations override these moral considerations in some cases. So what we have to do is keep emphasizing in whatever form possible the absolute essentiality of getting rid of these things ...." {NW 16 Jan 89}

10-25 January In the news media, especially in the FRG and the United States, more and more is published about the commercial underpinning and other details of the construction project at Rabta, Libya. Involvement of the Federal Intelligence Service (the BND) as well as foreign services in these disclosures is widely assumed {WP 26 Jan} The overall picture conveyed is of an ambitious manufacturing and technological complex still under construction at Rabta, having warehouses, workshops, a foundry and another plant serving a variety of purposes, at least some of which have to do with chemical weapons. The published satellite imagery of the complex {TZ 6 Jan, *Time* & NW 16 Jan, St 19 Jan} shows the chemical/pharmaceutical plant -- known to contractors as "Project Pharma 150" -- to be a relatively small part of the whole. Imhausen does indeed appear to have had a central role in the design and equipment of the chemical plant. {St 12 Jan, BW 23 Jan}

Purported internal company documents implicating Imhausen and Ihsan Barbouti International (IBI), both companies at the center of an international web of shell companies and Swiss financial operations, are described and later published in the news media {Reuter as in WT 12 Jan, St 12 Jan, DerS 16 Jan}. Key IBI figures, including Ihsan Barbouti himself, speak for the record about the project {Obs 15 Jan, *Al-Sharq Al-Awsat* 16 Jan in FBIS-NES 19 Jan, *Profil* 23 Jan in FBIS-WEU 24 Jan, St 9 Feb in FBIS-WEU Annex 10 Feb}. Imhausen issues only denials {NYT 12 Jan}. Several dozen corporations are named as associated subcontractors, shippers or financiers; they are portrayed in the media as mostly unwitting participants in what was now coming to be widely accepted, at least in the Western press, as a clandestine chemical weapons undertaking; West German firms preponderate, but others are from the GDR, Austria, Switzerland, Belgium, Thailand, Japan, France, Italy, Denmark, Yugoslavia, South Korea, Bri-

tain and the United States {St 12 Jan in FBIS-WEU Annex of the same date & St 19 Jan in FBIS-WEU Annex 23 Jan, NYT 13 Jan, DerS 23 Jan, BusW 23 Jan}.

10 January In the United States, a spokesman for rebel forces in southern Sudan says that intervening Libyan forces had used chemical weapons against them in the past six months. This is denied by the Sudanese Embassy {NYT 10 Jan}. A few days later the Gesellschaft für bedrohte Völker in West Germany would announce that, on 5 Jan, 1200 people had succumbed to poison gas, apparently mustard, near Nasir in Upper Nile province {NZZ 15 Jan}.

11 January In Britain, the Chemical Defence Establishment at Porton Down releases a report on its analysis of soil samples from Iraqi Kurdistan furnished by a television film-maker [see 23 Nov]. The analysis shows that the samples contained traces of mustard gas and related compounds, together with traces of the explosive tetryl. Parliament is later told that the Government believes that "this, following previous indications, amounts to convincing evidence that chemical weapons have been used by Iraq against their Kurdish population." {HansC 31 Jan}

11 January Belgian authorities arrest Josef Gedopt, owner of the Antwerp shipping firm Cross Link NV, which had the day previously been named in West German media for involvement in shipping materials to Rabta {ZDF television 10 Jan as reported in FR 12 Jan, Reuter as in WT 12 Jan}; he is charged with falsifying shipping documents {NYT 13 Jan}. Gedopt admits to having forged freight documents for shipments of chemical products to Libya {DTel 14 Jan}. The Examining Magistrate says: "We are sure that huge amounts of chemicals have been sent to Libya" {IHT 17 Jan}. A Feb 86 Cross Link shipment to Libya, from Antwerp and Rotterdam, is reported to have comprised seven tank-containers of 2-chloroethanol and phosphorus trichloride {FAZ & SZ 17 Jan}.

11 January In the FRG, Chancellor Kohl states at a press conference that the US allegations about the involvement of West German firms at Rabta [see 9 Jan] are not groundless {SZ & NYT 12 Jan}. His Cabinet had the previous day decided to tighten controls of exports to sensitive areas [see 1-3 Jan] and to order several companies to stop current deals with Libya {Reuter as in IHT 11 Jan}. A criminal investigation of IBI Engineering GmbH of Frankfurt had now been launched {WSJ 12 Jan}.

11 January The Paris Conference [see 7 Jan] ends with adoption by consensus of a Final Declaration that had been negotiated in a Committee of the Whole chaired by Finnish Foreign Minister Kalevi Sorsa. [The text of the declaration is printed in CWCB Issue No. 3.]

A total of 149 states had participated in the conference, half of them represented by their most senior foreign ministers. Many of the participating governments took the opportunity publicly to declare, clarify or reaffirm their CW policies. Pending publication of the conference proceedings, the following can be recorded here from what was reported of the 109 plenary-session speeches: (a) the total number of states to have declared non-possession of CW weapons had risen, by the end of the conference, to above 60; (b) South Korea was one of the new non-possession declarers, but not North Korea -- which did, however, propose the creation of a chemical weapon-free zone in the region; (c) Israel and South Africa also proposed local chemical weapon-free zones; (d) to the 129 states which, according to the French Foreign Minister, were parties to the 1925 Geneva Protocol, another 11, including both Korean states, were added during the conference, with 3 more announcing their intention of joining; (e) two more states withdrew the reservations of right to retaliate in kind which they had originally made upon joining the Protocol; and (f) several countries, in addition to the USSR [see 8 Jan], declared their intention of joining the CWC at the earliest opportunity -- of being among the initial signatories, regardless of which other states did or did not sign. {NYT 10 & 12 Jan, BG 12 Jan}

12 January The Council of the League of Arab States meets in extraordinary session at Foreign-Minister level and issues a communiqué about the Paris Declaration [see 11 Jan]. In it, the Council welcomes the final paragraph of the Declaration which reflects "the positions stated by the Arab States [see 8-9 Jan] in the course of the discussions and deliberations of the Conference regarding the necessity of linking the prohibition of nuclear weapons and the prohibition of chemical weapons, in accordance with priorities referred to in paragraph 45 of the Final Document" of UNSSOD-1. {Annex to A/44/126}

12-14 January A team of FRG officials is in Washington for consultations on CW proliferation [see 7 Jan] and on the intelligence that had led the Reagan administration to conclude that Libya was building a CW plant at Rabta with the involvement of West German companies {NYT 12 Jan, DPA 14 Jan in FBIS-WEU 17 Jan}. Government Spokesman Friedhelm Ost says about the information acquired by the team in America: "First, what is important is that there are no fundamentally new findings. Second, there is no additional material that could be utilized in court. There are some interesting details, which do strengthen our findings, so to speak -- the involvement of a number of FRG companies, but also of a number of foreign firms from our European neighboring countries. The US experts have information that some 3000 tonnes of chemicals are stored in this chemical complex in Libya, chemicals that can be turned into poison gas" {ZDF television 14 Jan in FBIS-WEU 17 Jan}. An unidentified US source is later quoted: "For the first time we were able to show them the raw material." {NW 23 Jan}

13 January The Offenburg Public Prosecutor (responsible for Lahr) announces that it is opening a preliminary criminal investigation into the actions of Imhausen-Chemie because of "overwhelming assumptions and indications in the press" {NYT 14 Jan}. "We made this decision ourselves after deciding that there were enough leads in news reports to open an investigation" {WSJ 16 Jan}.

15 January A British newspaper publishes an interview with Dr Ihsan Barbouti. He is an exiled Iraqi architect who came to London in 1978. He went to Libya in Mar 84, invited by the Ministry of Atomic Energy as consultant engineer, and became responsible for the master plan of Rabta, which was intended to liberate Libya from Western technological domination. Rabta was to have a foundry, a plastic molding workshop, storage hangars for Libya's vast imports, and, at Barbouti's suggestion, plant to make the heavy machinery needed for Libya's huge desalination scheme. He was the contractor for all of this. His contract terminated in Jun 87, since when he has not visited Rabta. But he is still owed large sums of money by Libya. {Obs 15 Jan}

The chemical or pharmaceutical plant he said was an add-on of 1985, outside his contract, built by the Libyans themselves. [This is doubted, however, by unidentified "Western intelligence sources" quoted in the American press as believing Barbouti to have been the key broker for the chemical factory {*Time* 27 Feb}.] He says, though, that through his office in Germany he had procured windows, shuttering, etc. for the pharmaceutical plant -- but never chemicals -- when buying materials for his own contract. When he left in Jun 87 he reckoned the building for the pharmaceutical plant was about 60 percent complete. He denied having had any commercial dealings with Imhausen. He doubted whether the chemical factory could be anywhere near ready for operations. The water-purification system, ordered from Germany, had yet to be delivered and installed -- a minimum of three months.

Koebler Engineering Consult of Frankfurt, run by a former officer of the now defunct IBI Engineering, is now handling Libya's

procurement operation for the Rabta complex.

In another press interview published the following day, Barbouti is reported to have said that Japanese companies played a principal part in building the Rabta plant, and equipment was imported from West Germany, East Germany, France, Italy, Denmark and Yugoslavia. The total cost of the complex he said was nearly $250 million for civil engineering. {*Al-Sharq Al-Awsat* 16 Jan in FBIS-NES 19 Jan}

16 January Salzgitter Industriebau GmbH, which is a wholly owned subsidiary of a state-owned FRG corporation, states in response to an allegation by *Stern* magazine that, between 1984 and 1987, it had completed plans for the piping and electrical aspects of a pharmaceuticals plant, Project Pharma 150, under contract with Imhausen, delivering the plans to an Imhausen subsidiary in Hong Kong. {FT 17 Jan}

16 January FRG Finance Minister Gerhard Stoltenberg announces, after his annual news conference on the budget, that his government had concluded that a Libyan chemical plant built with the help of West German companies is equipped to make poison gas. "We have to assume that at this factory there is a section that will be able to produce poison gas. This assumption is based on concrete indications and reports." Besides the criminal investigation of Imhausen, he said that government audits of several other West German companies had been undertaken {Reuter as in IHT 17 Jan, FAZ 17 Jan}. And he said that Salzgitter officials had confirmed it had provided plans for a plant which it believed would be built in Hong Kong; but the government had no firm evidence that the Hong Kong plant and the Libyan plant were one and the same, as *Stern* was asserting {WSJ 17 Jan}.

16 January President Reagan, in a Cable Network News television interview, says that the United States did not plan any military attack on a Libyan chemical plant as had been speculated. "We were not planning such an option." {WP 17 Jan}

16 January AAAS panel on CW, organized by the Federation of American Scientists, is held in San Francisco. Participants and topics are as follows: Robert Mikulak, ACDA, addressing the issue of "What needs to be verified?"; Nikita Smidovich, Soviet Ministry of Foreign Affairs, on "Principles and procedures for verification"; Rudiger Reyels, West German Ministry of Foreign Affairs, on "The International Authority"; Will Carpenter, Monsanto Agricultural Company, on "Chemical industry perspective"; and Ed Tanzman, Argonne National Laboratory, on "Legal aspects of implementation under US laws." [The recording of this panel can be ordered from Mobiltape company, 1-800-423-2050. Cassettes number 89-AAAS-31-3A and -3B. A panel of related interest, "Biological and toxin weapons: The renewed threat," is on cassettes -6A and -6B.]

17 January The CD Ad Hoc Committee on Chemical Weapons reconvenes in Geneva [see 15 Dec]. It holds four meetings prior to the end of session on 3 Feb. {CD/881}

17 January In the FRG there is a report on ZDF television of a West-German freight company, Rhein-Maas-Schiffahrtsgeseilschaft, having shipped several hundred tons of 2-chloroethanol, phosphorus trichloride and tributylamine to Libya during 1985 and 1986. {FR 19 Jan}

17 January Israeli Defence Minister Yitzhak Rabin warns that any country attacking Israel with chemical weapons "will be clobbered 100 times if not more." {DTel 18 Jan}

17 January In the US Senate, during the confirmation hearings for Secretary of State designate James Baker, Senator Helms speaks of the Libyan CW capability: a "German chemical company built the Libyan poison gas plant, a Japanese firm machined the bombs, and a German company is providing the air-to-air refueling capability"; and he releases a list of 35 foreign firms allegedly involved in CW trade.

As the Japanese firms, he names Japan Steel Works Ltd and the large trading firm Marubeni Corp. [Marubeni had been named in the American press one month previously, with attribution to unidentified US officials, for involvement in Rabta {CSM 13 Dec 88}.] Both these firms deny involvement in Libyan chemical weapons production, but both confirm exports to Libya {Kyodo in FBIS-EAS 18 Jan, JC 19 Jan}. Two days later the Japanese Foreign Ministry also denies that these firms had any such involvement {Kyodo 19 Jan in FBIS-EAS 26 Jan}.

17 January In the United States, ABC News carries a report that Iraq is developing biological weapons at a partly-underground installation 35 miles southeast of Baghdad near the village of Salman Pak; it quotes unidentified US, Arab and Israeli official sources as saying that Iraq was producing and stockpiling BW agents, mentioning typhoid, cholera, tularemia, anthrax and botulism; and it says that Israel had asked the US to pass on a warning to Iraq that, if the BW program continues, Israel will act to destroy it. {ABC World News Tonight, 17 Jan 89}

Unidentified US Government officials reportedly confirm the main thrust of the report, saying that the Iraqi research had been continuing for more than a year {NYT 18 Jan}. An unidentified Israeli official is later quoted as saying that Israel believes Iraq to have developed "a military biological capacity" – but that Iraq has not yet started "to manufacture actual biological weapons nor, more importantly, have they yet acquired any airborne weapons, such as sophisticated missiles, to deliver the bacteria they worked on" {Reuter as in WP 19 Jan}.

The Iraqi News Agency subsequently carries an official denial of the report as well as a warning against any Israeli attack {INA in FBIS-NES 18 Jan}. Israel denies its threat {AP 18 Jan as in IHT 19 Jan}. The Iraqi ambassador to the United States denies the existence of any sort of laboratory at Salman Pak, which he describes as a riverside summer resort town popular with newlyweds {WP 19 Jan}.

On the following day there is a story, attributed to unspecified Israeli intelligence reports, on Radio Luxembourg's German service that West German scientists are doing BW research for Iraq, working alongside East German and Cuban scientists, designing bacilli-carrying weapons. And the day after that Radio Luxembourg reports that a total of 24 FRG firms are suspected, according to information from the CIA, of having been involved in the building of production sites for biological and chemical weapons; the secret CIA list also named 12 firms from other countries {WT 20 Jan}. A senior Bonn official later says there is no evidence that West German scientists or industrialists are involved in the Iraqi BW program -- though Bonn does have some information indicating Iraqi capability to produce CW weapons {WSJ 23 Jan}.

18 January In the FRG, the Bundestag debates the Rabta affair. Chancellor Kohl comes under heavy attack. An SDP resolution is carried calling for a government report by 15 Feb setting out exactly which cabinet ministers and government departments were told at what point about a possible German involvement at Rabta and what they did about it. {NYT 19 Jan}

19 January In the FRG, the Rheinland-Pfalz Landtag calls unanimously for the removal of all chemical weapons from the province and requires the provincial government to furnish a report, by 30 Sep 89, on the schedule for the removal. {GRA in FR 20 Jan}

20 January The European Parliament adopts a resolution on chemical weapons, inviting the Twelve to implement immediately the self-restricting measures on chemical exports which Spanish Foreign Minister Ordonez had called for on behalf of the European Community at the Paris Conference. {AN 20 Jan}

20 January George Bush is inaugurated as 41st President of the United States.

23 January In Belgium, the Defence Ministry discloses plans to build a small chemdemil plant at Poelkapelle to dispose of the World War I CW munitions which continue to be unearthed at a rate of some 20 tons per year; there is a 200-ton backlog, mostly of mustard-gas munitions, accumulated over the 8 years since Belgium abandoned the practice of dumping such munitions at sea. {JDW 28 Jan}

23 January The lead story in the London *Times* is headlined "UK to accuse Kremlin over chemical arms: stockpile 'six times the level admitted to West'." It quotes unidentified "senior government sources" saying that Prime Minister Thatcher is expected to raise the issue with President Gorbachev and Soviet Defense Minister Yazov during their projected visit to Britain. The quality of the article may be judged from the following excerpt: "Last year the Soviet Government, after years of denying that it possessed chemical weapons, said that it had 50,000 tonnes of them. Senior government sources describe that as "an absurd underestimate." The Times has been told that intelligence agents have pinpointed at least 300,000 tonnes of "chemical and biological agents" in the Soviet Union. This figure includes weapons that have already been manufactured, and ammunition, and materials assembled for making weapons." {TL 23 Jan}

USSR Deputy Foreign Minister Victor Karpov suggests, in a letter which the *Times* later publishes, that the 50,000 vs 300,000 tonne discrepancy may be because the "senior government sources" did not explain to the newspaper's reporter the difference between munition-tons and agent-tons in measuring stockpile size. {TL 18 Feb}

24 January The Senate Foreign Relations Committee hears testimony from the Director of the Arms Control & Disarmament Agency, William Burns, to the effect that the Administration was now satisfied with Bonn's recent efforts to stop West German companies from providing Libya with the equipment and expertise to make chemical weapons. {NYT 25 Jan}

On CW proliferation more generally, Burns reportedly says that "about" 20 nations have a sufficiently large chemical industry to produce a militarily significant quantity of chemical weapons. He adds that the Administration believes "no more than a handful [of nations], five or six, actually possess a stockpile of such weapons." {WP 25 Jan}

25 January Following information received from an Imhausen technical draftsman by the Offenburg Public Prosecutor, West German Customs officers raid three firms suspected of Rabta involvement, as well as the homes of 12 managers; many documents are confiscated. The firms are Imhausen, its subsidiary in Bochum, the Gesellschaft für Automation, and Pen Tsao Materia Medica Center of Hamburg. {WP 26 & 27 Jan, WSJ 26 Jan}

25 January Three sanctions bills are introduced into the US Senate. One (S.8, "Chemical and Biological Weapons Control Act") is introduced by Senator Dole; by amendment to the Export Administration Act, it would punish companies, US or foreign, caught exporting specified materials/technologies to listed countries. He says: "The ultimate goal must be an international regime, in which all the nations of the Earth join, to wipe out all chemical weapons, and establish an effective control mechanism to insure they will never reappear. In the medium term, we must aim at an international regime to halt the spread of chemical weapons capability to all nations -- but especially those whose pattern of international conduct has been patently irresponsible and dangerous." {CR 25 Jan, pp S213-9}

Another (S.195, same title) is introduced by Senator Pell (and cosponsored by Senator Helms); it would require punitive measures to be taken against any nation proved to have used CBW. It would also expressly promote early agreement on banning chemical weapons. {CR 25 Jan, pp S554-6}

The third, (S.238, "Chemical and Biological Warfare Prevention Act"), is introduced by Senator Helms (and cosponsored by Senators Dole and Pell); it would punish firms involved in CBW technology transfer to Iran, Iraq, Syria and Libya, or to any other country that has used CBW in the past five years. {CR 25 Jan, pp S678-81}

25 January In Canada, Defence Minister Perrin Beatty releases the Barton Report [see 31 Dec 88]. He says it "provides clear assurances ... first, that the Canadian Government's policy of maintaining only a self-defence capability with regard to chemical and biological agents is fully respected at all times; and that testing takes place for self-defence and self-defence only; secondly, that all CB defence activities in Canada are conducted in a professional manner consistent with the high standards of Canadian environmental and health laws and regulations and pose no threat to public safety or the environment." He announces that Canada "will be inviting officials of the Government of the Soviet Union to visit the Defence Research Establishment at Suffield. The purpose of the visit would be to allow them to tour our facilities, observe the chemical agent destruction processes we have been using in Canada, and share information on technical issues. This will be the first visit by the Soviets to a Canadian military facility in several decades" {Address by Perrin Beatty at a National Defence news conference on the Barton Report, Ottawa, 25 Jan}. The invitation had in fact just been delivered to the Soviet Ambassador, who welcomed it {*Edmonton Journal* 26 Jan}.

25-6 January Czechoslovakia conducts its National Trial Inspection [see 7 Dec] as an experiment in nonproduction verification. The trial is in the Mnisek plant of the Association for Chemical and Metallurgical Production Usti nad Labem, a state enterprise in the Liberec District of northern Bohemia where chemicals for the textile and leather processing industries are produced. A Foreign Ministry spokesman says that a report on the trial will be made to the CD, and that a similar experiment will be conducted later "with the participation of foreign inspectors." {CTK 26 Jan in FBIS-EEU 27 Jan; *Rude Pravo* 27 Jan in FBIS-EEU 1 Feb}

26 January In North Korea the Foreign Ministry issues a statement calling for the Korean peninsular to become a zone free from nuclear and chemical weapons. It says: "the Government of the Republic in the future, too, as in the past, will not test, produce, store and introduce from outside nuclear and chemical weapons and will never permit the passage of foreign nuclear and chemical weapons through our territory and territorial waters and air" {KCNA in FBIS-EAS 26 Jan}. The North Korean embassy in Beijing invites Western reporters, for the first time ever, to a press conference about the statement {Xinhua 26 Jan in FBIS-CHI 27 Jan}.

26 January In Switzerland, the Federal Prosecutor's Office in Bern says that officials had raided IBI in Zurich, seizing documents; the company was being investigated on suspicion of breaking Swiss export laws by supplying substances which could be used to make weapons. {WP 26 Jan, Berne international service in FBIS-WEU 26 Jan}

26 January In the FRG, Chancellor Kohl issues a statement announcing that the government would "coordinate with its partners and allies on how to prevent the Libyan plant from beginning production of chemical weapons" {WP 27 Jan}. And the press learns from unidentified "Bonn security sources" that the BND and the CIA, in a joint assessment, had concluded that Libya still lacked some of the technology needed to produce chemical weapons at Rabta {Reuter as in WT 27 Jan}.

26 January At the CD Ad Hoc Committee on Chemical Weapons, the Western Group finally reaches agreement that the Chair of the 1989 session should be taken neither by the FRG nor by the UK, but by France. The UK becomes coordinator of the Western Group. {NAC Feb 89}

27 January The USSR press agency Novosti publishes a complaint about the completeness of the information released by the United States in accordance with the Second Biological-Weapons-Convention Review Conference agreement on information exchanges. {*APN Military Bulletin*, no 2}

27 January FRG Foreign Minister Genscher says he has set in motion a process of consultation between West European countries and the United States aimed at preventing Libya from completing its CW plant. {G 28 Jan}

28 January In the USSR, *Izvestiya* publishes a statement by Lt-Gen V A Lebedinskiy, a full member of the USSR Academy of Medical Sciences "and a leading expert on protection from biological weapons": "The Soviet Union has always been in favor of a ban on biological weapons, regarding them as an inadmissible means of warfare. Our country has never developed and never produced such weapons and has never possessed them." {*Izvestiya* 28 Jan in FBIS-SOV 1 Feb}

28-29 January The Pugwash Chemical Warfare Study Group holds its 14th workshop in Geneva. There are 60 participants from 22 countries. Work advances on an international CWC implementation study.

29 January An account is published in an American newspaper of how Iran, through its West German embassy, has secretly enlisted West German, US and Asian companies in an effort to build up a CW stockpile in an effort dating to the latter stages of the Gulf war. Shipments of thiodiglycol by Alcolac International of Baltimore to, unwittingly, Iran had commenced in Mar 87. An undercover US Customs operation, some of which had been described in the US press two months previously {*St. Louis Post-Dispatch* 1 Dec}, had involved the switching of water drums for the thiodiglycol drums of a subsequent shipment which arrived in Iran in late Jun/early Jul 88 via Singapore and Pakistan {NYT 29 Jan}. Alcolac is a subsidiary of the British company RTZ Ltd.

30 January In the US, the arrests in Baltimore are announced of a US and a Dutch businessman charged with export-law violations: they had been buying thiodiglycol from Alcolac [see 29 Jan] and shipping it to Jordan, presumably for transshipment to Iraq. {C&EN 6 Feb}

31 January In the FRG, Salzgitter Industriebau GmbH announces that it had found a document linking plans it had prepared for Imhausen to the suspected CW plant in Libya [see 16 Jan], namely a Feb 85 letter/telex to SIG from Imhausen referring explicitly to Rabta; it had been turned in to the Offenburg prosecutors {SZ & WP 1 Feb}. There is commentary in the press that this document is potentially the first evidence "that could be utilized in court" [see 12-14 Jan] to link Imhausen with the Libyan plant {Nat 9 Feb}.

31 January The UN Commission on Human Rights, meeting in Geneva, receives testimony from Amnesty International reporting Israeli abuse of tear-gas weapons during the *intifada*; some 60 people in all were said to have died in tear-gas related incidents, "some of them as a direct result of its misuse." {AP as in WT 1 Feb}

1 February US chemical weapons in West Germany, due to be withdrawn by 1992, are to be destroyed, not in Germany, but on a Pacific island [presumably Johnston Atoll], according to Federal Defence Ministry Parliamentary State-Secretary Willy Wimmer in a newspaper interview published today. {*Mainzer Rhein-Zeitung* 1 Feb}

1 February In Britain, the Foreign Affairs Committee of the House of Commons learns that the Defence Ministry is conducting "experiments on how to inspect military installations to make sure that, among a lot of other munitions, there is no CW or CW-related equipment being hidden." This is in addition to the British National Trial Inspection at a civil chemical plant. {HC 16 (Session 1988-89) p 242}

1 February The US CBW budget for Fiscal Years 1990 and 1991 [see 9 Jan], as of this date, is as follows, according to an Administration factsheet covering all four armed services:

		(millions of $)
	FY 1990	FY 1991
Chemical/biological defence		
RDT&E	312.9	326.0
Procurement	240.4	277.3
Operations & maintenance	166.7	170.0
Military construction	19.4	27.7
ASF war reserve	0	25
	$739.4	$826.0
Chemical demilitarization program		
RDT&E	1.1	0
Procurement	136.3	174.7
Operations & maintenance	149.1	139.0
Military construction	0	96.9
	$286.5	$410.6
Retaliatory program		
RDT&E		
MLRS binary warhead	31.4	6.4
Other RDT&E	13.0	30.5
Procurement		
155mm round production	47.0	71.4
Bigeye production	6.9	69.9
	$98.3	$178.2
Total program	$1124.2	$1414.8

2 February The US Senate is told by Senator Pressler of a proposal he had made to President Bush two days previously for the establishment of an international group modelled on COCOM for controlling trade in CBW-weapons-related materials and technology {CR 2 Feb, p S957}. [COCOM, the Coordinating Committee for Export Controls, is an informal group of 16 Western countries, including Japan, which, on the basis of an agreed list of strategic goods whose export is to be tightly controlled, monitors shipments to the Soviet Union and associated countries. It has a small clerical staff, and meets regularly in Paris, in an annex of the US Embassy.]

3 February In Tokyo, the Cabinet approves a new ordinance which, on 16 Feb, will bring the list of chemicals subject to export-licensing restrictions under the Foreign Exchange and Foreign Trade Control Law up to 10; the new addition is thionyl chloride. {Kyodo 3 Feb 89 in FBIS-EAS 7 Feb}

3 February The European Commission announces that it plans to propose legislation to curb exports of chemicals that may be used to make chemical weapons {AP as in Ind 4 Feb}. Later, officials in Brussels say draft legislation will be presented to an EEC foreign ministers' meeting on 20 Feb, following an FRG request {DTel 8 Feb}. An EC proposal along such lines had been rejected in 1984, opposed as a military, and therefore inadmissible, matter by France, Greece and Denmark {AFP as in WT 21 Feb}.

3 February In the Soviet Union the completion of construction of the Chapayevsk chemdemil plant [see 8 Jan] is announced and

photographs of it are released; operations will commence "after the equipment has been adjusted and the strictest requirements for ecological purity met." It is said that "this plant will probably not be the only one." {Moscow TV 3 Feb in FBIS-SOV 6 Feb}

3 February In the FRG the Finance Ministry announces that, on 20 Jan, its customs police had blocked a shipment of chemicals bound for Libya -- 255 tons of hexamethylenetetramine being supplied by Degussa to a fertilizer factory -- until its chemical properties and potential uses had been fully ascertained {Reuter as in NYT 4 Feb}. Although the chemical was not on the export-control list [see 13 Feb] its export was to be made conditional upon "negative certification." Later, after expert testimony had been received that the chemical could not be used for the manufacture of poisonous substances, the export is formally approved. {DPA 23 Feb in FBIS-WEU 24 Feb, Reuter as in Ind 24 Feb}

3 February In Geneva, the resumed 1988 session [see 17 Jan] of the CD Ad Hoc Committee on Chemical Weapons ends with adoption of a new rolling text {Appendices I & II to CD/881}. It represents modest progress over the previous rolling text [see 12 Sep], perhaps most marked in the disappearance of some of the several dissenting passages resulting from the now-abandoned [see 29 Sep] French insistence on being allowed to maintain a security stock." Other advances include emergent (but not yet full) consensus on the protection of verification-derived confidential information, on the production of Schedule [1] chemicals outside the projected single special facility, and on the modalities of challenge inspection. The new rolling text also registers agreement that the highest organ for the projected new international organization should be called "the Conference of the States Parties" (rather than "Consultative Committee" or "General Conference").

The Schedule [1] progress had resulted from the USSR lifting the objections it had been expressing during 1988, both to permitting production of research quantities (up to 100 g) of Schedule [1] chemicals outside the special facility, and to negotiating procedures whereby larger quantities of the chemicals could be produced for pharmaceutical purposes outside the facility. {CD/PV.486}

6 February Speaking about NATO policies to the Norwegian Atlantic Committee, Paul Nitze says: "With regard to the chemical weapons negotiations, one cannot underestimate the complexities involved in, first, ensuring the participation of all CW-possessing and CW-capable states and, second, creating an effective verification regime in the face of new technologies, increasing proliferation, a dual-capable chemical industry, and the need to protect sensitive non-CW-related information during inspections." {Official text}

6 February The chairman of one of the West German companies involved at Rabta, Ernst Pieper of Salzgitter, says in an interview published today: "Through Imhausen we received plans and arrangement drawings from Italian and French companies showing the detailed equipment of the plant. On this basis, we designed the foundations and the system of electrical lines and pipelines. According to our knowledge, nearly another hundred German, European and US enterprises participated in the Pharma 150 project, and so none of the companies really knew what was going on." {DerS 6 Feb}

7 February In Geneva, the CD reconvenes for its 1989 sessions. The Foreign Minister of France, Roland Dumas, presents the Declaration of Paris [see 11 Jan]. In his commentary on its implications, he argues for a thematic approach in the future work of the CD Ad Hoc Committee on Chemical Weapons. The approach would involve setting up five working groups: (1) on verification, including routine and challenge inspection; (2) on legal and political questions, such as the proper articulation between the Geneva Protocol and the CWC; (3) on institutional matters concerning the projected international organization, its components and its relationship to the United Nations organization; (4) on technical matters, such as the proper definitions for establishing the scope of the treaty; and (5) on the transition period, including measures for achieving universality and for "maintaining the security of all" while stocks and factories are being destroyed in accordance with the treaty. Reiterating what President Mitterrand had told the United Nations [see 29 Sep 88], he says "France possesses no chemical weapons and will not produce any once the convention enters into effect." {CD/PV.484, pp 29-33}

The Chairman of the Swedish Disarmament Commission, Maj-Britt Theorin, says that, given the political will, the CWC could be ready "in 1990 or maybe even earlier" {CD/PV.484, pp 13-19}. This attracts skeptical comment in the corridors, so it is reported; the head of the British delegation, Tessa Solesby, is said to think 1992 "more realistic" {DTel 8 Feb}, while the head of the US delegation, Max Friedersdorf, suggests that a meaningful treaty cannot be drafted before the end of next year {LAT 8 Feb}.

There is pressure from the group of neutral and nonaligned CD member-states (the "Group of 21") for the mandate of the Ad Hoc Committee to be changed so that the negotiations are explicitly required to subsume a ban on use of CW weapons, and that "final drafting" of the treaty no longer be excluded. {CD/PV.484, pp 21-2}

8-10 February FRG Chancellery Minister Wolfgang Schäuble visits US officials in Washington to discuss export controls and joint measures to prevent export of nuclear and CBW weapons-related technologies. He also outlines the export-law reforms which the Federal government will shortly be introducing. {Reuter 7 Feb, Ind 9 Feb}

As reported in the US press, the reforms will, among other things (such as strengthened export-licensing requirements for particular chemicals), require companies planning to export materials that could be used to build chemical weapons plants in the Third World to register and notify the Federal government. Minister Schäuble also says that his government will seek an early meeting of the Australia Group to urge all of its members to adopt similar measures, and that it will be taking a similar initiative within the European Community. {CSM 15 Feb}

9 February At the CD in Geneva, the outgoing chairman of the Ad Hoc CW Committee, Ambassador Sujka of Poland, presents the latest "rolling text" [see 3 Feb]. {CD/PV.485, pp 15-18}

9 February President Bush, in an address to a joint session of the Senate and House of Representatives, says: "Chemical weapons must be banned from the face of the earth, never to be used again. This won't be easy. Verification will be difficult. But civilization and human decency demand that we try." {NYT 10 Feb}

9 February In the US Senate, the Committee on Governmental Affairs and the Permanent Subcommittee on Investigations start two days of joint hearings on the spread of CBW weapons. Director of Central Intelligence William Webster testifies: "We are concerned that the moral barrier to biological warfare has been breached. At least 10 countries are working to produce both previously known and futuristic biological weapons." [He did not identify the countries, but the *Washington Times* later quoted "intelligence sources" as saying that they included Cuba, Iran, Iraq, Libya, North Korea, Syria and the USSR {WT 10 Feb}.] He says that "as many as 20 countries may be developing chemical weapons ... Iraq, Syria and Iran are stockpiling a variety of CW agents for battlefield missions," loading them into "bombs, artillery shells, artillery rockets and -- in some cases -- battlefield missiles." Since the early 1980s Iraq had produced "several thousand tons of chemical agents" and was continuing to do so. On Libyan CW capability, much of what he says had been heard before, in the unattributed disclosures of the previous months [see 1 Jan]: Libya was nearly ready to begin production of mustard and nerve

agents, potentially in tens of tons per day; Japanese-built plant at the Rabta complex is "equipped with the precision materials to manufacture components for a variety of bombs and artillery"; spillage problems (as with last summer's), however, were likely to continue. All those CW arms programs are crucially dependent on foreign suppliers. {Prepared statement}

On the CWC he says that the United States has not yet developed the means to stringently monitor such a ban: "I would not be happy with what we currently have." The Administration has not yet decided whether to support the recently introduced sanctions legislation [see 25 Jan]. {NYT 10 Feb}

The Senate Select Committee on Intelligence holds a closed hearing on the same subject in the afternoon. There is testimony from the CIA and the State Department. {WP 10 Feb}

13 February A consortium of US, Japanese and European chemical trade associations hopes to establish an international early warning system to protect companies from becoming unwittingly involved in chemical weapons projects, so it is reported in the American press. {WSJ 13 Feb}

13 February The FRG government extends the list of chemicals requiring special export permits {TL 14 Feb}. This is approved both by the chemical manufacturers association (the Verband der Chemischen Industrie) and by the relevant trade union (IG Chemie, Papier, Keramik) {SZ 14 Feb}, despite earlier opposition by the union {SZ 13 Feb}. The number of chemicals on the export-control list would now be 17; previously it had been 8 {Bericht der Bundesregierung an den Deutschen Bundestag entsprechend seiner Entschliessung vom 18.1.1989, 15 Feb, p 57}.

The 17 comprise the 9 that are now on the Australia-Group control list [see 12-13 Dec] plus N-methyl-3-piperidinol, 3-quinuclidinol, dimethylamine, dimethylammonium chloride, 2-chloroethanol, potassium fluoride, N,N-diisopropyl-ß-aminoethyl chloride and N,N-diisopropyl-ß-aminoethyl mercaptan {Nat 23 Feb}. The controls are to apply to export of these chemicals to all destinations, without exception {CD/PV.491, p 6}.

14 February European Community foreign ministers convene in Madrid for an informal political co-operation meeting. They agree in principle to the proposed EC regulation on chemical export controls [see 3 Feb]. Hitherto, the EC has avoided military issues because of Irish neutrality concerns. But Eire now says: 'We're talking about disarmament, and Ireland is not neutral on disarmament." The point is established that the regulation is to arise not from EC treaties but from informal political agreement among the ministers. {AN and Ind 17 Feb}

14 February Brazil informs the CD that it had conducted its National Trial Inspection on 6 Dec {CD/PV.486} and submits a detailed report shortly afterwards {CD/895}. A simulated inspection had been conducted at the isopropylamine production plant of Quimica da Bahia SA.

14 February USSR CD ambassador Yuri Nazarkin, speaking at a plenary session of the CD in Geneva, refers to statements in favor of banning chemical weapons which President Bush had made during his election campaign and says: "We hope it will not be too long a time before we see these statements materialize into specific positions of the US delegation at the negotiations." {CD/PV.486}

US CD ambassador Max Friedersdorf says to the press afterwards: "I don't buy Ambassador Nazarkin's posture of trying to put the ball in President Bush's court. We have adequate guidance and instructions to proceed. If they really want to be constructive they should go ahead and be forthcoming on our request for data exchange." {Reuter 14 Feb}

15 February In Tokyo, Toshiba Corporation issues a statement saying that in late 1985 it had provided electrical equipment for the metal-working plant in Libya now suspected of producing canisters for chemical weapons. The order had come in Jun 85 from Japan Steelworks, part of the Mitsui Group [see 14 Sep 88]. The equipment comprised an "electrical substation," consisting of transformers, a control panel and a distribution system that would provide the entire Libyan plant with electricity. {WP 16 Feb, NYT 17 Feb}

15 February In the USSR, more details are published on the Chapayevsk chemdemil plant [see 3 Feb], partly in response to local concerns. The new chief of the Soviet Chemical Troops, Lt-Gen S Petrov, describes the plant as "a large production facility based on the latest technology"; it is now "being prepared for a full-scale test of the equipment," after which "the State Acceptance Commission will do its work." {KZ 15 Feb in FBIS-SOV 27 Feb}

To *Pravda*, General Petrov reportedly says: "The pathological secrecy surrounding everything associated with chemical weapons comes to us from the past. But if today we are ready to do everything possible and necessary to conclude in the near future a convention banning chemical weapons and calling for their complete destruction, why do we need this secrecy?" {*Pravda* 15 Feb in FBIS-SOV 27 Feb}

15 February The Federal German Cabinet approves what it calls a "drastic tightening" of export controls. The measures include (a) a tripling of personnel, from 70 to 210, for the principal Federal export monitoring agency; and (b) an increase from 3 to 15 years in the maximum sentence for any West German convicted of helping to deliver chemical, biological or other "extremely dangerous" arms or related technology. These measures are announced after the Cabinet meeting by Economics Minister Helmut Haussmann, who says the package is designed "to protect the good reputation of the German export economy." {*Handelsblatt* in FBIS-WEU 16 Feb, WP 16 Feb}

The Federal government submits a report to the Bundestag outlining the package and also providing the report which the Bundestag had called for earlier [see 18 Jan] on the details of the Government's knowledge of West-German industrial involvement in Rabta, when exactly that knowledge was acquired, and which departments and offices of government had been informed {Bericht der Bundesregierung an den Deutschen Bundestag entsprechend seiner Entschliessung vom 18.1.1989}. The report gives much detail in these respects; its drafts had reportedly been through several expansions, in phase, so it was suggested, with information-leaks in the media {DieW 15 Feb}. The initial intelligence was said to have dated back to 22 Apr 80, when inconclusive indications were received that Libya was planning to build a CW-weapons factory with the assistance of unidentified West- and East-German technicians. The report is released at a press conference by the head of Chancellery, Dr Wolfgang Schäuble {WSJ 16 Feb}. In doing so, he speaks of involvement in the Rabta project of six other West European countries {G 16 Feb}, and he says that the Rabta plant would not only be capable of producing chemical weapons but was actually being built for that purpose {FAZ 16 Feb}.

Speaking at the Nüremberg Chamber of Commerce and Industry, Chancellor Kohl says that his government had firmly decided to prevent the participation of West-German companies or citizens in the production of nuclear or CBW weapons anywhere in the world. {AN 17 Feb}

16 February Ethiopia informs the CD that it "does not produce or stockpile chemical weapons." {CD/PV.487}

16 February In Geneva the CD formally re-establishes its Ad Hoc Committee on Chemical Weapons for the year, Ambassador Morel of France taking the chair [see 26 Jan], without, however [see 7 Feb], changing the mandate of the committee {CD/889} as had been urged by all groups save the Western {CD PV.487, pp 13-16}. It agrees to invite the 20 CD-nonmember countries that have

by now applied to do so to participate in the work of the Ad Hoc Committee during 1989, Iran this year no longer opposing such observer status for Iraq {CD/PV.487 pp 17-19}. The countries are (in the order listed by the CD Chairman) Norway, Spain, Finland, Switzerland, Austria, Ireland, New Zealand, North Korea, Portugal, Libya, Denmark, Turkey, South Korea, Senegal, Bangladesh, Syria, Greece, Tunisia, Zimbabwe and Iraq {CD/PV.487, p 17}.

17 February The new Chairman of the CD Ad Hoc Committee, Ambassador Morel of France, submits his plan of work for the 1989 session. It provides for the five working groups envisaged by his Foreign Minister [see 7 Feb], to be chaired by, respectively, the FRG, Egypt, India, Sweden and the GDR. {CD/CW/WP.222}

17 February In the FRG, the Bundestag once again debates the Rabta affair {*Das Parlament*, 3 Mar, pp 7-10}. Chancellery Minister Schäuble presents the government's report [see 15 Feb], and details the new legislation proposed. The SPD calls for economic sanctions against Libya if it does not return materials allegedly supplied by West German firms. Foreign Minister Genscher says that, although the new legislation and the steps which his government is taking internationally (within the EC, for example, and its "diplomatic initiatives ... in the area of the Arab League") are essential, they can be no substitute for "a worldwide verifiable ban on the development, production, proliferation and use of chemical weapons." Green MdB Alfred Mechtersheimer, who had visited Rabta {DerS 20 Feb}, is alone in expressing belief that the plant may indeed be intended for pharmaceuticals.

20 February The Foreign Affairs Council of the European Community (i.e. the 12 foreign ministers) meeting in Brussels approves a new Community regulation which introduces into the EEC a standardized system for the export of 8 specified chemicals that can be used in the production of chemical weapons. The chemicals are the basic Australia-Group eight [see 12-13 Dec]. The regulation requires that anyone seeking to export any of the blacklisted chemicals outside the EEC must obtain an export license from their national authorities, which will have the power to withhold licenses "if there is reason to believe the products in question will be used to make chemical weapons or are likely to be delivered directly or indirectly to belligerent countries or to zones of serious international tension." The regulation is to take effect immediately. It implements the previous week's Madrid decision [see 14 Feb] taken in a "political co-operation" meeting [in which the European Commission has no formal standing]; the same body would have to decide on any changes in the list. The regulation codifies in Community law what already exists, via the Australia Group, in national law. The possibility of regulating export of chemical plant [see 8-10 Feb] is kept open. {TZ, SZ, TL & FT 21 Feb, AN 22 Feb}

20 February Hungary submits to the CD the report on its first National Trial Inspection, which had taken place on 7 Dec 88 at a single-purpose facility of the CHINOIN Pharmaceutical and Chemical Works in a suburb of Budapest. The plant, which has a capacity of 1-5 kilotonnes per year, is used to make a carbamate precursor of the fungicide Benomyl. {CD/690, CD/PV.489}

21-23 February The United States conducts its National Trial Inspection at a plant making an organophosphorous flame-retardant at Gallipolis Ferry, West Virginia, volunteered by Akzo Chemicals. Eleven countries have now completed at least one such inspection. {C&EN 27 Feb}

22 February Director of Naval Intelligence Thomas Brooks testifies as follows to the HASC: "In addition to Iraq, quite a few Third World states are developing or have achieved CW capabilities: Iran, PRC, North Korea, Taiwan, Burma, India, Pakistan, Syria, Israel, Egypt, Ethiopia, and Libya .... A number of states -- some of which [have just] been mentioned ... -- are also working on biological weapons. Several are thought to possess either the actual BW agents or the capability to produce them. Several others may already have the rudimentary means." [See also 9 Feb] {Prepared statement}

23 February Yugoslavia at the CD proposes "the proclamation of a moratorium on chemical weapons production." {CD/PV.489 p 9}

24 February Italy furnishes the CD with an interim report on a trial inspection of two Italian chemical facilities {CD/893}. Foreign Minister Andreotti later tells the CD that the inspection had been done by "an international group of scientists" {CD/PV.491, pp 10-13}.

27 February In the FRG, the chairman of Imhausen-Chemie GmbH, Jürgen Hippenstiel-Imhausen, announces his resignation, to be effective at the end of March {Reuter as in Ind 28 Feb}. This had been demanded the previous week by the company's union representatives {WSJ 21 Feb}; and the Federal Ministry of Research and Technology was withholding certain research-contract payments at least for as long Hippenstiel-Imhausen remained in charge {WSJ 28 Feb}. The company had been suspended, a month earlier, from membership of the Verband der Chemischen Industrie until the charges against it had been clarified {C&EN 6 Feb}.

28 February The USSR submits to the CD the report on its National Trial Inspection [see 27 Dec], which had been performed at a facility in Dzerzhinsk where some 800 tonnes of N,N-dimethyl- and N,N-diethylaminoethan-2-ols had been produced during 1988 for consumption in a variety of manufactures at 34 user enterprises. {TASS 28 Feb in FBIS-SOV 1 Mar; CD/PV.490}

28 February In the United States, the Bureau of Export Administration issues an interim rule expanding the "foreign policy controls" on CBW-relevant chemicals and biologicals for which the Department of Commerce has responsibility {*Federal Register* 28 Feb}. Previous controls are amended or, as in the case of the now-outdated ECCN 4707B, scrapped.

The rule places controls on a total of 40 different chemicals; they are the chemicals which, as of mid-1988, made up the control-list and the warning-list of the Australia Group [see *SIPRI Yearbook 1988*, p 105]. The rule groups the 40 chemicals into three control-lists, specifying for each list the countries to which the listed chemicals may not be exported without validated licenses. The list that in this respect is the most restrictive, ECCN 4798B, comprises 11 chemicals. No unlicensed export of these chemicals is permitted to any destination except for 20 specified countries. These correspond to the present membership of NATO and the Australia Group. For the other two lists, countries for which export licenses are required are specified; the larger of the two groups of countries thus specified subsumes the smaller.

As for re-exports -- a problem addressed particularly strongly in the new Federal German package of controls [see 15 Feb] -- the rule does no more than prohibit unlicensed export of any of the chemicals "to any destination with knowledge that they will be re-exported directly or indirectly ... to Iran, Iraq, Syria or Libya."

1 March US CIA Director, William Webster, testifies to the Senate Foreign Relations Committee that the United States continues "to receive information relative to specific kinds of assistance" to the Libyan CW program from foreign governments. And he says it would take Libya as little as 24 hours to make the Rabta site appear to be a pharmaceuticals factory. Unidentified officials are later quoted in the American press as believing that Libya was now seeking to hire technicians to refit the plant to make pharmaceuticals. {NYT 2 Mar, WT 8 Mar}

During a closed session in the afternoon, according to Defense Department and Congressional sources, the Committee

is reportedly told by the CIA that a 50-strong team from Mitsubishi Heavy Industries was working at the Rabta complex and had set up two production lines for poison-gas canisters in a plant next to the chemical production facility {DN 8 Mar}. Mitsubishi and the Japanese Government both deny the allegations when they surface the following week {Kyodo in FBIS-EAS 10 Mar; Ind 10 Mar}.

2 March The foreign ministers of West Germany and Italy jointly address the CD once again [see 4 Feb 88]. Hans-Dietrich Genscher, speaking of the Biological Weapons Convention, says that his government "will advocate adequate verification measures to supplement the Convention" at the 1991 review conference. He argues in some detail that the only effective counter to CW proliferation is the projected global treaty, on which he says that it "is possible to solve the problems still obstructing conclusion of a convention by the end of this year," including verification. He states that the FRG carried out its first National Trial Inspection "a few weeks ago," simulating a routine inspection; in preparation now was a simulated "*ad hoc* check" at a major chemical plant; and, when the time comes for international trial inspections, the "German chemical industry will also make a plant available for that purpose." {CD/PV.491}

6 March US Secretary of State James Baker, in a speech at the CFE talks in Vienna on their opening day, says: "I am happy to announce that, as one of his first acts, President Bush has directed our new administration to explore ways to accelerate the removal of our existing chemical weapons from Germany."

Secretary Baker says, further, that the Australian Government has agreed to organize an international conference of governments and the chemical industry on ways to prevent the spread of CW weapons; it is to discuss what he terms "the growing problem of the movement of chemical weapons precursors and technology in international commerce" {official text}. Australian Foreign Minister Gareth Evans issues a press release on the projected conference, indicating that its "date ... and details relating to participation in it are still to be finalized" {CD/897}.

7 March The British government, in a written response to a parliamentary question, says: "We do not believe that a chemical weapons non-proliferation treaty along the lines of the NPT would effectively remove the threat of chemical weapons. With other states we are, therefore, pursuing an effectively verifiable global convention, completely prohibiting the development, production, acquisition, stockpiling or retention, and transfer of chemical weapons." {HansC 7 Mar}

7 March French CD Ambassador Pierre Morel tells a press conference in Geneva that France will shortly be conducting a National Trial Inspection; 6 countries had already done so, and up to 15 more were expected. {NYT 8 Mar}

10 March The German Democratic Republic submits to the CD a report on its National Trial Inspection, which had been conducted the previous autumn at a production-unit processing dimethylaminoethanol in a pharmaceutical multipurpose facility of Arzneimittelwerk Dresden. {CD/899}

10 March The *New York Times*, once again with attribution to unidentified US officials, now publishes a story about Egypt having "made a major effort to improve its ability to produce poison gas by acquiring the main elements of a plant from a Swiss company" {NYT 10 Mar}. The plant is said to be for sarin nerve gas. The company is named as Krebs AG of Zurich, which is reported to have been warned by Swiss authorities in 1987 and then, a week ago, asked by them to sever connections with the "pharmaceutical factory" under construction near Cairo, at Abu Zaabal; which it did {FT 11 Mar}.

The President of Egypt, Hosni Mubarak, who is in Brussels, denies the report; he is quoted as saying: "We are against chemical weapons and, of course, don't make any such factories" {AP as in IHT 11-12 Mar}. The Egyptian Ambassador to Israel, Muhammad Basyuni, says in an interview: "In an official capacity and in my capacity as a representative for the Arab Republic of Egypt ... I like to affirm that Egypt does not have chemical weapons and does not produce such weapons" {Jerusalem radio in FBIS-NES 16 Mar}. Later, President Mubarak reportedly says: "The Americans are making a grave mistake when they accuse Egypt of acquiring chemical weapons. We don't tell lies. We have no chemical weapons. You should not put us on the same level as Libya" {WP 1 Apr}.

13 March Japan submits to the CD a report on the on-site inspections conducted as its NTI [see 7 Dec] during the autumn at three (unidentified) chemical production facilities. {CD/CW/WP .228}

15 March Czechoslovakia submits to the CD a report on its National Trial Inspection [see 25-26 Jan], which had been conducted at a plant for continuous production of dimethyl phosphite and its discontinuous processing into the flame-retardant Spolapret OS, of which some 500 tons are produced there annually. {CD/900}

22 March In Algeria, President Chadli Bendjedid says to the visiting Federal German Minister for Economic Cooperation that Libyan leader Gadhafi has agreed to put the chemical factory at Rabta under international control; experts from Algeria, the FRG and Italy should join the management of the plant. {FAZ 23 Mar}

22 March In testimony to the Congress on progress in the Chemical Demilitarization Program, the US Army says that its first full-scale facility -- the Johnston Atoll Chemical Agent Disposal System -- is nearing the start of its 16-month Operational Verification Test; and that requests for proposals to build the first stateside disposal facility, at Tooele Army Depot, have recently been issued. {Prepared statement of Michael Owen before the House Defense Appropriations Subcommittee, 22 Mar}

In testimony on the Chemical Retaliatory Program, the Defense Department says that production of the Bigeye bomb and the binary MLRS warhead, complementing the binary artillery projectile currently in production, will not begin until 1991 and 1992 respectively; further, "our recent classified report to the Armed Services Committees describes our plan for intensifying our research and development efforts for a long range standoff CW system." {Prepared statement of Thomas Welch before the House Defense Appropriations Subcommittee, 22 Mar}

29 March Under the auspices of the CD Ad Hoc Committee on Chemical Weapons in Geneva, an informal meeting is held for exchanges of information on the National Trial Inspections. The number of countries participating in the NTI project has now risen to 18, the additions since the previous information exchange meeting [see 7 Dec] being Austria, Brazil [see 14 Feb], Czechoslovakia [see 15 Mar] and France [see 7 Mar]. Of the 18, only Austria and the Netherlands have still to conduct their planned inspections. Several other participating countries have yet to submit their reports. {CD/CW/WP.236}

REVIEW: WORLD CW ARMAMENT

A survey of what has been disclosed about the stocks of CW weapons and the factories for making them that exist around the world today, prepared by Julian Perry Robinson, University of Sussex, UK.

PART II: THE SOVIET UNION

Overview and comment

The Soviet government has recently begun to release detailed information about its CW armament, ending a prolonged period of secrecy on the subject. It has published a figure for the overall size of its stockpile of chemical weapons: not more than 50,000 metric tons (tonnes) of CW agent, both weaponized and stored in bulk. It has announced the chemical identities and characteristics of standard Soviet CW agents: the two vesicants mustard gas and lewisite, the three nerve gases sarin, soman and VX, and the irritant CS. It has put standard Soviet chemical munitions on international display: 19 varieties, comprising a hand-grenade, tube- and rocketartillery projectiles, tactical missile warheads and aircraft munitions.

Overall, there are striking similarities between what has thus been disclosed and what is known of US CW armament (on which see Part I of this review, in CWCB No. 2). Thus, of the seven different varieties of casualty-causing chemical that are said to be in the two stockpiles, five are common to both, and neither the vesicant that is unique to the US stockpile (agent T) nor the nerve gas that is unique to the Soviet stockpile (soman) would seem to represent a major operational difference. The most modern of them, agent VX, common to both arsenals, began its production in the United States in 1961. Perhaps the supply of tactical CW missiles on the Soviet side is a significant difference. But in 1973 the Joint Chiefs of Staff decided that the US stockpile of such weapons no longer needed to be retained, the warheads being destroyed three years later. A quantitative comparison points to the same order of magnitude on both sides, though as yet no official figure is available for the size of the US stockpile.

No comparison is yet possible as regards production capacity for chemical weapons, since neither the US nor the Soviet government has disclosed any data, the latter not yet having released information even about its production facilities. An interesting historical light can, nevertheless, be cast: it seems that, by the end of World War II, each country was maintaining approximately the same capacity as the other for production of the dominant CW agents of the time.

Senior Western officials claim that the Soviet government has not in fact disclosed all the varieties of chemical munition or agent that it has stockpiled, that it has exhibited only its older technologies, and that its stockpile is several times larger than stated. Such contradictions need to be resolved if doubts about the reliability either of Soviet declarations or of Western intelligence-cum-verification machinery are not to obstruct the treaty. It may be, as several Soviet publications have been hinting, that analogous doubts exist on the Soviet side about the completeness of US disclosures.

For topics on which data are hard to acquire, the available intelligence may be graded, in ascending order of reliability, as "possible," "probable" or "confirmed." Absent from recent Western statements about Soviet CW armament is any reference to such gradings. There used to be greater candor. In 1980, the US Defense Secretary told the Senate that there was no single US estimate of the Soviet stockpile, let alone a confirmed one; he spoke of the different agency estimates ranging from less than 30,000 to several hundred thousand agent-tons. Even as late as 1985, President Reagan was informed by his Chemical Warfare Review Commission that "exact quantities ... of Soviet chemical munitions are not precisely known." Things have evidently changed since then, but does the change lie in anything more than a new selectivity towards the estimates on the part of Western officials in their choice of what to believe and to propagate? If there has actually been an increase in the available data, that is not at all reflected in the open domain. Rather the opposite, for the British government has said that its estimate of 300,000 agent-tonnes, which it asserted with renewed vigor during the period immediately prior to President Gorbachev's April 1989 visit to London, actually dates back to the early 1970s.

In this emergent dispute, it may very well be that both sides are acting in good faith, even though what they say appears contradictory. Such is the legacy of past secrecies and mistrust. A way out of the predicament lies through the process of bilateral contacts, information sharing and technical exchange visits which has now, most fortunately, begun.

Introduction

In 1987 Soviet authorities began, for the first time in almost 50 years, to speak publicly and explicitly about Soviet CW armament. The head of the USSR delegation at the Conference on Disarmament (the CD), Ambassador Yuri Nazarkin, has since stated that, during the period of silence, "official Soviet representatives neither asserted nor denied that we have chemical weapons."[1] Yet Soviet officials or state agencies had occasionally said or published things which amounted sometimes to an acknowledgement of Soviet CW armament[2] and sometimes to a denial of it.[3] There were even instances of the same person at different times having apparently said both. Evidently these statements were made without the full authority or information of government; or they were misreported. There was confusion and suspicion in the outside world.[4] But by the end of 1988 the Soviet government had published a figure for the overall size of its stockpile of CW agents; it had put Soviet CW weapons on international display; and it had begun to disclose information about research, production and deployment.

The first substantial token of the new Soviet openness came in the public speech which General Secretary Mikhail Gorbachev delivered in Prague on 10 April 1987:[5]

> I can tell you that the Soviet Union has stopped making chemical weapons. As you know, the other Warsaw Treaty countries have never produced such weapons and never had them on their territory. The USSR has no chemical weapons outside its own borders and, as far as stocks of such weapons are concerned, I should like to inform you we have started building a special plant to destroy them. Its commissioning will enable us rapidly to implement the process of chemical disarmament once an international convention is concluded.

Later, senior figures of the Soviet government would state that these words represented a change of the most fundamental kind in Soviet CW armament policy. Thus, in December 1988, Deputy Foreign Minister Victor Karpov told *Izvestiya*: "We have halted our production and have no intention of resuming it. It may have taken some time, but we have made this decision." His explanation of why it took so long, despite the "very strong impression," as he put it, created by President Nixon's unilateral halting of US production in 1969, was this: "In my view, a kind of inertia was in operation. An inertia in thinking."[6] Foreign Minister Shevardnadze had been more trenchant still when addressing his ministry's Scientific and Practical Affairs Conference on 25 July 1988:[7]

> What were we guided by when we continued to push for quantity in chemical weapons over the past 15 years? This cost an enormous amount of money and diverted substantial production capacities, manpower and other resources. Who made any calculation of what would be the price of such action? ... What impression did we create of ourselves and our intentions when we continued stockpiling weapons which we ourselves characterized as the most barbaric? The country's reputation and image suffered great damage. To anyone who says that this was done out of concern for the country's security, we reply: it was the most primitive and distorted notion of what strengthens a country and what weakens it. Even an elementary technical level of knowledge would enable one to grasp that chemical weapons are more dangerous for us and for European states than for the United States. Rivalry in this sphere has proved profitable for the USA, as geographical factors are not in our favour.

The newly released official Soviet information co-exists in the public record with Western descriptions[8] of Soviet CW armament. On some topics there is agreement between the two, but on others there is a divergence which is striking. On others still, *glasnost* has yet to provide an alternative to the portrayals made available by Western governments. And there are some topics on which there is no official information of any sort, Western or otherwise: only the unofficial writings of commentators and publicists whose work may or may not be related to intelligence assessments as yet undisclosed officially. In the account which follows, all three categories of source material are used, which is which being clearly indicated.

Some readers may prefer, on this particular subject, to reject as unreliable all information not furnished by the Soviet government, in which case they will, at least for the time being, have to bear with large tracts of ignorance. Others may have exactly the opposite preference, in which case they will need to make judgments, not only of the likelihood of misinformation or disinformation being absent from their preferred sources of information, but also about how well informed non-Soviets are actually likely to be on the subject. In 1985 the President of the United States was told the following by his Chemical Warfare Review Commission: "The depth and quality of US intelligence on Soviet chemical warfare capabilities and intentions is not adequate. US intelligence agencies have for years virtually ignored the chemical and biological threat. Lately some improvement is evident, but not enough to provide detailed and up-to-date knowledge of Soviet chemical weapons capabilities."[9] Among other Western countries, the British government seems to place much confidence in its own appraisals, even its quantitative estimates; but its justification for doing so is not obvious.

Types of CW agent held

In October 1987 the USSR Ministry of Defence put its CW weapons on display for members and observers of the CD at the Shikhany military facility of its Chemical Troops. The briefings[10] included descriptions of two different blister gases (vesicants), four nerve gases and one irritant. Soviet authorities stated in response to specific inquiries at the time that no other types of CW agent existed in the Soviet arsenal.[11]

The lists of standard Soviet CW agents which Western authorities have published in the past have tended to be longer than the Shikhany listing. In the *Military Posture Statement* by the US Joint Chiefs of Staff (JCS) for Fiscal Year 1985, it was stated that the Soviet CW-agent stockpile contained one type of blood gas and six types of blister gas, as well as four types of nerve gas, one or more types of toxin and, probably, at least one type of incapacitant (other than an irritant). A briefing by the US Defense Intelligence Agency (DIA) current then included a choking gas -- phosgene -- in the list as well, and identified the blood gas as hydrogen cyanide.[12] Among the chemicals named on such Western lists are ones which Soviet authorities have since said that the USSR had in earlier times weaponized, including phosgene and cyanogen chloride.[13] Perhaps the Western lists also include agents which never actually entered Soviet service -- as, according to the USSR Foreign Ministry,[14] in the case of the nerve-gas tabun, once regarded by US intelligence as a mainstay of the Soviet CW arsenal.[15] The reference to toxins and incapacitants in the JCS list (and several other lists, too) presumably reflected the reports then being heard of Soviet chemical and toxin weapons in use in Afghanistan, Cambodia and Laos; reports which today, however, stand unverified and in disrepute.[16] A British authority has recently stated as fact what the German Wehrmacht was supposing 50 years ago,[17] that "a more persistent version" of hydrogen cyanide "has now been developed for the Soviet chemical arsenal"; he has also spoken of "dramatic developments in biochemical technology" from which the Soviet Union has "produced new agents with a hitherto undreamed-of range of potency."[18]

A good many unofficial commentaries have likewise asserted the presence of novel CW agents in the Soviet arsenal. On this matter President Reagan's Chemical Warfare Review Commission had observed: "there is evidence they are developing new types of toxic agents to defeat NATO gas masks and protective clothing";[19] also that the USSR is "believed to be pursuing development of both lethal and incapacitating toxins that could produce, for example, sudden panic or sleepiness in defending forces."[20] Considered as development goals, such novelties have nothing uniquely Soviet about them; accounts of past US research, for example, show that they and others like them are staples of any active CW-weapons R&D effort. Altogether different questions are whether Soviet technology is likely to have achieved the goals where others have failed, and whether, if it has, the novel agents are actually worth weaponizing.

The agents which the Soviet authorities described during the Shikhany briefings were as follows:

Mustard/lewisite mixture: a vesicant fill for air-delivered munitions, which are adapted to disseminate it as a cloud-spray of vapor, aerosol and droplets capable of threatening direct casualties to unprotected personnel both by inhalation and by skin action. It is also intended for use, the briefing said, as a contaminant of terrain, matériel and engineering structures.

Not described was the composition or method of production of the agent. A 1940 Soviet CW manual had referred to a 50:50 mixture of the mustard gas and the lewisite, but had mentioned other proportions also, with or without the addition of solvent -- typically 15 percent dichloroethane.[21] Such mixtures could remain liquid even at temperatures down to -20°C, thereby preserving the ballistic stability of projectiles into which they were filled; and they could have an effect more rapid than that of mustard gas alone. British and German commentaries say that most Soviet production of mustard at the time of World War II was by the Levinstein process,[22] as was the US. A thiodiglycol process was thought to be in use also, capable of providing a runcol-type mustard.[23]

Viscous lewisite: a vesicant fill for field-artillery munitions, which are adapted to disseminate it as a cloud-spray of lewisite vapor, aerosol and droplets similarly to the mustard/lewisite mixture, and for the same purposes. According to a Yugoslav authority, thickened lewisite is designated by the Soviet code-symbol R43A.[24]

The Shikhany briefing did not identify the thickener used to increase the viscosity of the lewisite, or the production method. The latter presumably involved the interaction of acetylene and arsenic trichloride in the presence of a catalyst; variants of such a process had been used in Soviet production of lewisite at the time of World War II, according to German Wehrmacht investigators then.[25]

Sarin: this nonpersistent nerve-gas (which, as was seen in Part I of the present review, is a mainstay of the US CW arsenal) is used as a fill for tube- and rocket-artillery munitions adapted to disseminate it as a vapor/aerosol cloud. As such, the agent is intended for use as a direct respiratory casualty threat to unprotected personnel. According to the Yugoslav authority cited earlier, sarin is designated by the Soviet code-symbol R35.[24] The Shikhany briefing did not identify the production method.

Viscous soman: a semipersistent nerve-gas fill used in a late-model design of air-delivered spraybomb adapted to disseminate it as a spray of droplets and coarse aerosol. As such, the agent is intended for use as a direct casualty threat to unprotected personnel by skin penetration and also as a contaminant of terrain, matériel and engineering structures. The Soviet code-symbol VR55, which in the open literature was first noted in a West German military journal in 1970,[26] is understood to designate this agent. The US Congress heard testimony from an Army witness in 1975 about Soviet field-testing of thickened-soman munitions in a program that was said then still to be continuing.[27]

The Shikhany briefing identified neither the thickener nor the production method. Soman itself -- 1,2,2-trimethylpropyl methylphosphonofluoridate -- was first characterized in 1944, so it is stated in the available literature, by the German chemist Richard Kuhn The Yugoslav authority states that it is designated by the Soviet code-symbol R55.[24] It is a close chemical congener of sarin and therefore accessible by much the same production processes, with pinacolyl alcohol being used in place of isopropanol. Pinacolyl alcohol is, however, rather difficult to manufacture,[28] and has no substantial civil application.

VX: this persistent nerve-gas, which is prominent in the US arsenal, is used as a fill for tube- and rocket-artillery munitions, and also for the warhead of a tactical missile, which disseminate it as a spray of droplets and coarse aerosol. Like the thickened soman, it is intended for use as a direct casualty threat to unprotected personnel by skin penetration and also as a contaminant of terrain, matériel and fortifications. As noted in Part I, US production of VX had commenced in 1961.

Viscous VX: a nerve-gas fill for the warhead of a large tactical missile adapted to disseminate it as a spray of droplets and coarse aerosol for the same purposes as the unthickened VX. The Shikhany briefing did not specify the thickener used.

CW-capable weapons

Soviet authorities have as yet made no explicit disclosure of which weapons in the Soviet force structure are CW-capable in the sense that toxic chemical munitions are maintained for them in the military supply channels. Their nearest approach has been the display at Shikhany. From the characteristics of the munitions that were shown then, summarized in Table 1 from the subsequent Soviet submission to the CD,[10] conclusions may readily be drawn about the associated delivery systems.

Table 1 shows that the USSR has a minimum of nine different types of CW-capable weapon system apart from the hand grenade: at least three tube-artillery systems, at least three multiple-launch-rocket systems, at least two short-range missile systems and at least one type of strike aircraft. The actual total is presumably greater, for some of the munitions can no doubt be used in more than one type of weapon system.

The lists of Soviet CW-capable weapons which Western authorities have published in the past have usually been longer than the list implicit in the Shikhany display. President Reagan's Chemical Warfare Review Commission stated in 1985: "It is clear beyond doubt ... that the Soviets now deploy chemical warheads on 16 different modern weapons, including: Aircraft bombs, Howitzer rounds, Mortar rounds, Landmines, Grenades, Multiple rocket launchers, Free rockets over ground (FROG), Tactical ballistic missiles. There also is evidence that Soviet cruise missiles may have been provided chemical warheads."[29] Perhaps such Western lists include weapons for which a CW-capability is no longer operational. The current US stockpile, for example, contains large numbers of chemical landmines and chemical mortar rounds, but these the US Defense Department no longer lists in the "useful" portion of its weapons inventory. As regards the CW cruise missile, the reference to it by the President's commissioners was no more assured than a similar public mention in the JCS *Military Posture Statement* seven years previously[30]; and there is no listing of it in the DIA's *Soviet Chemical Weapons Threat* which was widely distributed a few months after the Commission report.[31]

That DIA publication does, however, refer to chemical-submunition warheads for Soviet tactical missiles, as well as bulk-agent warheads; only the latter type figured in the Shikhany display. And US Air Force testimony to the Congress a year previously had told of persistent-agent capability being available for four different types of Soviet surface-to-surface missile.[32] In unofficial Western publications there is reference also to CW warheads for weapons of the Strategic Rocket Forces,[33] and also to CW artillery munitions of calibers and types additional to those shown in the table,[34] as well as to further types of CW cluster munition[35] and to an additional type of infantry CW weapon.[36]

The then Commander of the Soviet Chemical Troops, Col-Gen Vladimir K Pikalov, told *Pravda* the day after the Shikhany display: "We displayed all our existing CW delivery means .... We displayed all our toxic agents and all our chemical munitions, with the exception of certain modified types that are not fundamentally different in terms of apparatus or armament from those that were shown."[37] But in *Soviet Military Power 1988*, released some five months after the display, the US Defense Department said flatly: "The Soviets did not ... show the complete range of chemical weapons and agents they possess."[38] During a televised news conference in Moscow a month after the display, General Pikalov said: "In Shikhany we showed real examples of chemical ammunition currently issued to the Soviet armed forces. They were designed both in the 1950s and in the 1980s."[39] But the British Foreign-Office minister said in a public speech shortly afterwards that "the visit to the Soviet chemical weapons installation at Shikhany showed us nothing more recent than 1952,"[40] even though one of his officials had been inspecting, among other things, VX munitions, including one for a weapon (the FROG-7B) that did not enter service until 1970. During a speech in Moscow in February 1988, British Foreign Secretary Geoffrey Howe said: "We welcome the willingness of the Soviets to put on display at Shikhany chemical weapons of the Forties and Fifties, but ... why no evidence of what you have been doing in the last three decades?"[41]

Be that as it may, the Shikhany display allows the following Soviet weapons to be characterized as CW-capable:

Table 1. The Soviet CW ammunition displayed at Shikhany on the occasion of the CCD site visit in October 1987.

Calibre	filled weight (kg)	Agent fill type	Agent fill weight (kg)	Method of dispersion	Fuse
CHEMICAL HAND GRENADE					
	0.25	CS pyromix	0.17	Burning	
CHEMICAL ARTILLERY MUNITIONS: Tube-artillery shell					
122-mm	23.1	Viscous lewisite	3.3	Explosive	Time
122-mm	22.2	Sarin	1.3	Explosive	Percussion
130-mm	33.4	Sarin	1.6	Explosive	Percussion
130-mm	33.4	VX	1.4	Explosive	Proximity
152-mm	42.5	Viscous lewisite	5.4	Explosive	Time
152-mm	40.0	Sarin	2.8	Explosive	Percussion
CHEMICAL ARTILLERY MUNITIONS: Rocket-artillery shell					
122-mm	19.3	Sarin	3.1	Explosive	Percussion
122-mm	19.3	VX	2.9	Explosive	Proximity
140-mm	18.3	Sarin	2.2	Explosive	Percussion
240-mm	44.3	Sarin	8.0	Explosive	Percussion
CHEMICAL WARHEADS FOR TACTICAL MISSILES					
540-mm	436	VX	216	Air inflow	VT
884-mm	985	Viscous VX	555	Air inflow	VT
AIR-LAUNCHED CHEMICAL MUNITIONS					
100-kg	80	Mustard/lewisite	28	Explosive	Percussion
100-kg	100	Mustard/lewisite	39	Explosive	Percussion
250-kg	233	Sarin	49	Explosive	Inst percussion
250-kg	130	Viscous soman	45	Air inflow	Time
500-kg	280	Mustard/lewisite	164	Air inflow	Time
1500-kg	963	Mustard/lewisite	630	Air inflow	Time

Cannon, 122mm. As noted in the table above, sarin and thickened-lewisite fills were described for 122mm tube-artillery shell. Western commentaries[42] have ascribed CW capability to four Soviet 122mm cannon systems: the pre-World War II towed M-30 howitzer; its 1960s replacement, the D-30 gun-howitzer; its successor, the self-propelled 2S-1 *Gvozdika*, introduced in 1974 and which is said to be capable of firing all its predecessors' ammunition; and the now-obsolete D-74 field gun. An unsourced British commentary states that the Shikhany shell could be fired by the D-30 and the 2S-1.[43]

Cannon, 152mm. Sarin and thickened-lewisite fills were described for 152mm tube-artillery shell. Western commentaries[44] have ascribed CW capability to six Soviet 152-mm cannon systems: the pre-World War II towed M-10 howitzer; its wartime follow-on, the D-1; its 1950s replacement, the D-20 gun-howitzer; the self-propelled gun-howitzer 2S-3 *Akatsiya*, introduced in 1973 and which is said to be capable of firing the full range of ammunition for the D-20; and the two more recently introduced long-range guns, the towed M1976 and the self-propelled 2S-5. An unsourced British commentary states that the Shikhany shell could be fired by the D-20 and the 2S-3.[43]

Cannon, 130mm. Sarin and VX fills were described for 130mm tube-artillery shell. Western commentaries[45] have ascribed CW capability to the 130mm long-range gun, the M-46, introduced in 1954 and now giving way to 152mm guns.

Multiple rocket launcher, 122mm. Sarin and VX fills were described for 122mm rocket missiles. At least three different 122mm MRL systems exist in the Soviet force structure, the first of which -- the self-propelled 40-tube BM-21 *Dvina*, introduced in 1964 -- was probably, in the view of US defence officials,[46] designed specifically for CW purposes. The BM-21 is now giving way, in some Soviet formations, to the BM-27, which is a self-propelled 16-tube 220mm system.

Multiple rocket launcher, 140mm. A sarin fill was described for 140mm rocket missiles. Western commentaries[47] have ascribed CW capability to at least two 140mm MRL systems: the self-propelled 17-tube BM-14 system, which was a predecessor of the BM-21, and the obsolescent towed 16-tube RPU-14 system.

Multiple rocket launcher, 240mm. A sarin fill was described for 240mm rocket missiles. The delivery system for them is presumably the BM-24, a 12-rail truck-mounted system dating from around 1954 (like the BM-14), thought to have been superceded by the BM-21.

Tactical missile, 540mm. A VX fill was described for 540mm tactical missile warheads. The missile is presumably the free-flight rocket known as "FROG-7B" in the West, where CW capability had been ascribed to it soon after its introduction -- replacing earlier CW-capable FROGs, and supplementing the heavier FROG-7A nuclear missile -- in about 1970.[48] In the Soviet Union this weapon is known as the R-75 *Luna M*, and is now giving way to the OTR-21 *Tochka*, known in the West as the SS-21 *Scarab*, a battlefield-support missile with a warhead calibre of about 460mm.

Tactical missile, 884mm. A thickened-VX fill was described for 884mm tactical-missile warheads. The missile is presumably the one known in the West as the SS-1c *Scud*-B, introduced in 1965 and long credited with CW capability.[49] It is now giving way to the SS-23 *Spider*. A thickened nerve-gas bulk-filled warhead for *Scud* had been mentioned in an article published in 1979 by a US Army Chemical Corps officer.[50]

Attack aircraft. A mustard/lewisite fill was described for four different types of aviation ammunition. Two were impact-fused explosive-burst bombs of 100-kilogram rating; the others were large time-fused spraybombs of 500-kg and 1500-kg rating. Also described was a sarin fill for a 250-kg bomb, this, like the other four, being a largely cylindrical blunt-nosed munition. In addition, there was a 250-kg spraybomb of streamlined shape for which a thickened-soman fill was described; it was the only one of the aviation munitions on display which seemed suited to external carriage on high-performance aircraft. The Shikhany briefings gave no indication of the aircraft for which these various munitions were qualified, but DIA publications have referred to the MiG-27 *Flogger* strike aircraft[31] and the Mi-8 *Hip*-E[14] and Mi-24 *Hind*[51] attack helicopters as CW delivery systems. Unofficial commentaries have referred also to the MiG-21 *Fishbed*, Su-17 *Fitter* and Su-24 *Fencer* strike aircraft.[52]

Stockpile size

The Soviet cessation of CW-weapons production which General Secretary Gorbachev had announced in Prague had actually occurred in February 1987, according to the Soviet Foreign Ministry.[53] On 26 December 1987 a statement was released in Moscow which included the following: "The Ministry of Foreign Affairs of the USSR is authorized to state that the Soviet Union's stocks of chemical weapons comprise no more than 50,000 tonnes metric of chemical warfare agents."[54]

Western governments expressed skepticism. The British Defence Secretary, in his *Statement on the Defence Estimates 1988*, said: "This figure ... is significantly below Western estimates of the total Soviet stockpile and requires clarification."[55] President Reagan, in his final report on "Soviet Noncompliance with Arms Control Agreements," said: "the US seriously questions the accuracy of this figure .... [It] serves only to diminish the confidence the US would have with respect to Soviet intentions to comply with the provisions of a chemical weapons convention."

The British government had told Parliament in 1985 that the "UK assessment is that the Soviet Union .. possesses a stockpile of some 300,000 tonnes of nerve agent alone,"[56] an estimate that had been made from "careful assessment of all information available."[57] Parliament was later told that the estimate dated from the early 1970s, and that it was now considered "to be a minimum figure."[58] In American rather than European units, rounded up, the figure would be about 350,000 tons, which was what a NATO estimate of the Soviet stockpile had been in the late 1960s[59] -- a time when British officials were also quoting another type of estimate,[60] one that had apparently been developed in America during the late 1950s,[61] namely that chemical weapons accounted for about one-sixth of the total Soviet munitions stockpile. In contrast, the US government, whose different intelligence agencies have produced a broad span of different estimates, has avoided putting any one particular number, in an official publication, to the size of the Soviet stockpile. The Defense Department *Report on the United States Chemical Warfare Deterrence Program* sent to the Congress in March 1982 gave only a range of figures, reportedly 30,000 to 700,000 tons of CW agent. This has not discouraged some US officials from voicing the estimates they favor; thus it was that journalists covering the Shikhany display heard what seems to have been the largest number yet to have been recited with any semblance of authority: 800,000 tonnes.[62] CW agent manufactured before World War II remains in the stockpile, according to the DIA.[63]

The Soviet figures quoted in Table 1 show that 50,000 tonnes of CW agent could provide the fill for 270,000 - 1,120,000 tonnes of Soviet chemical artillery projectiles, or for 75,000 - 240,000 tonnes of chemical aircraft bombs or other massive bulk-filled munitions. Maybe there is explanation here for the divergence in the Soviet and Western figures: a confusion in the counting rules or units of measure. USSR Deputy Foreign Minister Victor Karpov suggested as much in a letter recently published by a London newspaper: "Of course, there are different methods for measuring chemical weapons stockpiles. You can count only the weight of toxic chemicals, or include the weight of the metallic parts of warheads or canisters. We have chosen the first more accurate method."[64] Another possible explanation is that the Western numbers are based on estimates of requirements which have not, however, been fulfilled.

The Conference on Disarmament was told in April 1988 by the USSR representative that the 50,000-tonnes figure included CW agent stored in bulk containers as well as in actual munitions (a distinction which had at one time been thought responsible for the divergence). Beyond that, however, there has been no further official Soviet information about the relative sizes of the weaponized and unweaponized stocks. As was seen in Part I of the present review, 61 percent of the US stockpile is held in bulk storage (a circumstance which used to be portrayed to the Congress as a deficiency in US retaliatory capability, one that militated in favor of the long-sought procurement of binary munitions). One Western appreciation is that much of the Soviet stockpile, too, is in bulk storage. This is held to be because the USSR wants to be able to upload its chemical munitions in the field as needed. The relatively high density within the Soviet force structure of vehicles such as the ARS-14 chemical tanker used for decontaminants etc. is explained, on this appreciation, by the requirement to be able to move substantial volumes of CW agent from rear-area factories or storage depots at short notice to supply munitions-filling operations within the administrative areas of forward divisions.[65]

It would seem that this is, in the West, a rather recent and perhaps still controversial view of how the USSR manages its CW armament. A commonly voiced supposition previously had been that a large proportion of Soviet ammunition stocks comprised ready-to-use CW munitions: up to 30 percent of the available FROG and *Scud* warheads, for example, or 20 percent of the artillery munitions, according to a US Army account in 1979.[50] Such a view still finds expression in the West. A French commentary in 1986, which estimated the Soviet stockpile at 500,000 agent tonnes, 40 percent in munitions, repeated the US Army percentages.[66] A West-German commentary of the same period, quoting stockpile estimates of 200,000 - 700,000 tonnes (whether of agents or of munitions, it was not clear), spoke of 30-40 percent CW loadings for Soviet mortar, tube- and rocket-artillery ammunition, and 5-20 percent loadings for aircraft bombs.[67]

Salient to this issue, obviously, are the capacity and handling facilities of the "special plant" to destroy chemical weapons which General Secretary Gorbachev had disclosed in his

Prague speech. When Foreign Minister Eduard Shevardnadze issued his invitation to the CD in August 1987 to visit Shikhany,[68] he also spoke of later inviting experts to "the special chemical weapon destruction plant now being built in the vicinity of the town of Chapayevsk," which is near Kuybyshev in the Volga area. At the Paris Conference in January 1989 he announced that destruction operations would commence later in the year. President Reagan has described the capacity of the Chapayevsk plant as "large".[69] Photographs of the installation were shown on Moscow television in February 1989, with the information that additional destruction plant would probably be built.[70] Soviet journalists reported that the plant was designed to handle a variety of munitions types, that trials would shortly be commencing, and that the intention was eventually to have the plant operating for about 100 days per year.[71]

Deployment

In the course of his major foreign-policy statement of 15 January 1986, General Secretary Gorbachev said that the Soviet Union had "always strictly abided" by the principle of not transferring chemical weapons to anyone else and not deploying them in the territories of other states.[72] "The USSR does not have chemical weapons outside its borders," he said in Prague in April 1987.[5] All of this was reaffirmed in March 1988 in a formal statement to the Conference on Disarmament by Ambassador Nazarkin, who said, further, that the "USSR has not transferred to other States technology or equipment for the production of chemical weapons."[73] In a press statement in January 1989, the Deputy Commander of the Soviet Chemical Troops, Academician Lt-Gen Anatoly Kuntsevich, said: "This means that there are no chemical weapons on the territories of our allies for the Warsaw Treaty Organization, and that the Soviet Union has no stocks of forward-based toxic agents."[74]

Western governments have made little public comment on these declarations. In the past some had made contrary assertions, but rarely with any great semblance of conviction. The Federal German Defence Ministry had, in its 1970 Defence White Paper, stated that Soviet forces in Czechoslovakia, East Germany and Poland maintained stocks of chemical weapons; and some Federal officials continued to make public reference to such stocks in subsequent years. But, testifying to the Senate in 1982, the US Defense Department disavowed knowledge of whether Soviet CW weapons were or were not forward-deployed in allied countries[75]; and in the following year the NATO Supreme Commander declined to confirm an unofficial report about numerous Soviet offensive chemical weapons sites having been moved forward, saying only: "We do know that they have chemical storage sites built in forward areas ... which we believe contain chemical weapons."[76] A somewhat more assertive stance was later adopted by the DIA, which, in its 1985 report already mentioned, included a map of Europe showing 32 locations where "chemical munitions are reportedly stored" in Bulgaria, Czechoslovakia, East Germany, Hungary, Poland and Romania.[77] But it was common knowledge that, in their respective assessments of Soviet CW capabilities, the DIA and other parts of the US intelligence community were in disagreement;[78] and the DIA map formed no part of a US Government consensus, widely referred to though it was.

As to CW storage depots inside the Soviet Union, the 1985 DIA report included another map which showed nine such locations. One of these was said, in a press report, to be near Buyanki, some 100 km from the Chinese border.[79]

There is an unsourced report in the US press which states that Soviet planning for a major European war provides for chemical-munitions supply at a rate of 2000 - 3000 tons per day for 60 days.[80]

Production capacity

Although CW weapons were no longer in production in the Soviet Union, the production facilities for them remained, Ambassador Nazarkin told the Conference on Disarmament in March 1988.[73] Official Soviet information about that production capacity has not yet been released. Nor has the Soviet Union yet made public disclosure of the facilities it has within its chemical industry which make chemicals that could be used as production intermediates for CW agents.

According to a Soviet emigré writing in 1976, CW-agent production had been taking place, not within the military sector of the Soviet industrial economy, but within the civilian chemical industry.[81] An authoritative West-German source stated at that time that "the Soviet Union ... has a chemical industry capable of producing 30,000 tonnes of chemical munitions per year."[82] Production management and oversight responsibility is said by the DIA to rest with the Chemical Troops.[12] An unsourced Western publication stated in 1987 that output had recently been at a rate of

Table 2. Some locations of Soviet CW-agent production facilities prior to 1946, according to contemporary German military intelligence.

Location	CW agents* reportedly produced
RUSSIAN SFSR	
Aleksin, Tul'skaya Obl.	H, AC
Asha, Chelyabinskaya Obl.	H, L, AC, CK, CG, DP, DM
Berezniki, Permskaya Obl.	H, L, AC, DP, DA, DM
Chapayevsk, Kuybyshevskaya Obl.	H, L, AC, CG, DP, PS
Dzerzhinsk, Gor'kovskaya Obl.	H, HN3, AC, CK, CG, DP
Groznyy, Checheno Ingushskaya ASSR	CK, PS
Ivanovo, Ivanovskaya Obl.	CG
Kazan, Tatarskaya Obl.	H, CG
Kemerovo, Kemerovskaya Obl.	H, L, AC, CG, DP, PS, DM, CN
Kineshma, Ivanovskaya Obl.	H, ?HN3, ?CX, CG, DA, DM
Leningrad, Leningradskaya Obl.	CG, CN, BA
Leningrad-Okhta, Leningradskaya Obl.	H, AC, CK
Magnitogorsk, Chelyabinskaya Obl.	HN3, ?CX, AC, CK
Moscow (5 sites), Moskovskaya Obl.	H, L, CG, DP, PS, ?DM
Novomoskovsk, Tul'skaya Obl.	H, L, AC, CG, DP, PS, DA, DC, DM, CN
Polevskoy, Sverdlovskaya Obl.	AC, CK
Saratov, Saratovskaya Obl.	CG
Shchelkovo, Moskovskaya Obl.	H, AC
Sverdlovsk, Sverdlovskaya Obl.	AC, CK
Tomsk, Tomskaya Obl.	H, L, AC, CG, DP, DA, DM, CN
Volgograd, Volgogradskaya Obl.	H, L, CG, DA, DC, DM
Volsk, Saratovskaya Obl.	Pilot plants: H, L, ED, MD
Voskresensk, Moskovskaya Obl.	H, L, AC, CK, CG, DP
AZERBAIDZHAN SSR	
Baku	AC, CK
KAZAKH SSR	
Karaganda	AC

* Designated here by their US Army code symbols. The vesicants: H = mustard gas, L = lewisite, HN3 = nitrogen mustard, CX = dichloroformoxime, ED = ethyldichloroarsine, and MD = methyldichloroarsine. The blood gases: AC = hydrogen cyanide, and CK = cyanogen chloride. The choking gases: CG = phosgene, DP = diphosgene, and PS = chloropicrin. The irritants: DA = diphenylchloroarsine, DC = diphenylcyanoarsine, DM = adamsite, CN = chloroacetophenone, and BA = bromoacetone.

about 1500 tonnes, apparently of agent, per year, and that its purpose was to update the inventory and support the development program.[83]

At the time of the Shikhany display, the leader of the visiting US team, Ambassador Max Friedersdorf, reportedly said: "We estimate that there are 14-20 production sites on Soviet territory, whose whereabouts the Soviet Union refuses to disclose."[84] Four years previously the US Air Force had informed the Congress that "the Soviets have between 19 and 50 chemical munitions production plants."[85] In contrast, that same year's JCS *Military Posture Statement* spoke of only 14 Soviet chemical agent-production facilities; and a year later the DIA, in another of the maps presented in its *Soviet Chemical Weapons Threat 1985*, marked just 10 places as the "general location of chemical warfare agent production centers in the Soviet Union." The DIA publication identified one of the locations as Shikhany; another, which it stated was where a German nerve-agent plant captured during World War II had been reassembled, was the "Volgograd Chemical Combine." An official West German assessment of about the same time reportedly spoke of more than 13 Soviet production facilities, locating one of them at Dzerzhinsk in addition to others at Shikhany and Volgograd.[86]

The 1985 DIA publication stated that the Soviet chemical industry had "had an agent production program since the late 1920s."[87] At the time of World War II, the German Wehrmacht had intelligence on CW-agent production at around 80 Soviet chemical factories, it was subsequently reported.[88] For 29 of the factories, the intelligence was regarded as confirmed, though only one, at Novomoskovsk (then called Stalinogorsk), had actually been overrun by German forces; others in the path of the invading armies had been evacuated. The locations of the 29 are shown in Table 2. Many of them were, and often still are, the sites of large chemical combines. The chemical plants within these combines and elsewhere that had been used for CW-agent production were rarely large: most of the mustard-gas plants -- at 18 of the locations -- were said to have been built to a capacity of 750 tonnes per month.[89] Even so, the Wehrmacht reckoned that overall Soviet CW-agent production capacity had, by the end of the war, reached 120,000 - 150,000 tonnes per year for mustard gas[89] and 40,000 tonnes per year for phosgene,[90] with additional capacity for other agents. Actual production was thought to have run at maybe 10-12 percent of capacity.[89]

Today, these numbers seem large, but by the standards of the time -- before nerve gas -- they were not. In the United States, for example, the production capacity for mustard gas that was maintained for the duration of the war in Europe was 27 million pounds per month, in other words 147,000 tonnes per year, plus 42,500 tons per year for phosgene and further capacity for other agents.[91]

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6 S Dardykin, *Izvestiya*, 28 Dec 88, p 4, in FBIS-SOV-89-001, pp 5-6.

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18 Hemsley, *supra* (note 8), pp 27 and 58.

19 Stoessel, *supra* (note 9), p 27.

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Calendar of Relevant Events

* Spring CD session ends 27 April; summer session resumes 13 June

* Senate Governmental Affairs Committee hearings on export control legislation, 2 May

* House Foreign Affairs Committee hearings on US CW policy, 4 May

* Senate Foreign Relations Committee hearings CW export control legislation, 9 May

* Ministerial meetings of Secretary of State Baker in Moscow, 10-11 May

* Senate Governmental Affairs Committee hearings on BW proliferation, 17 May

* Chemical Manufacturers Association meeting on chemical weapons, 25 May, Grand Hotel, Washington, DC, open to representatives of the US chemical industry

* International Commission of Health Professionals, CBW conference, 29 May For more information, write to 15 Route de Morillons, 1218 Grand Saconnex, Geneva, Switzerland.

* Senate Banking Committee hearings on export sanctions bill, tentatively late in May

* Annual Pugwash meeting in Cambridge, 24-27 July, closed

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