

IMPLICATIONS OF SOVIET USE OF CHEMICAL AND TOXIN WEAPONS FOR U. S. SECURITY INTERESTS

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Implications of Soviet Use of Chemical and Toxin Weapons for US Security Interests

Special National Intelligence Estimate

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IMPLICATIONS OF SOVIET USE
OF CHEMICAL AND TOXIN WEAPONS
FOR US SECURITY INTERESTS

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THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS, EXCEPT AS NOTED IN THE TEXT.

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SCOPE NOTE

Soviet development and transfer of lethal chemical and toxin agents and their use against combatants in Laos, Kampuchea, and Afghanistan have breached a widely accepted barrier against employment of these weapons which, with few exceptions, has held fast since World War I. The determination that the Soviet actions constitute a violation of the 1975 Biological and Toxin Weapons Convention was made at the highest levels of the US Government. The violation has profound implications for US security interests.

This Estimate examines these implications in four areas:

- International reactions affecting arms control.
- The spread of chemical weapons.
- Western defenses against such weapons.
- Intelligence collection and analysis. (c)

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KEY JUDGMENTS

The Soviet Actions

The Soviet chemical and toxin warfare actions were almost certainly the result of a conscious leadership decision. That decision was probably influenced by the following considerations:

- That the agents used would be militarily effective for the purposes intended.
- That no threat of retaliation existed.
- That the situations offered opportunities for operational testing.
- That the probability of detection was low and any evidence acquired would be ambiguous.
- That the political risks of a response were negligible, and any adverse international reaction could be contained.

If these were the considerations that guided the Soviet decision, we believe they have been largely borne out by events.

International Reactions Affecting Arms Control

The intelligence evidence¹ that formed the basis of the Presidential determination of Soviet violation of the Biological and Toxin Weapons Convention has been steadily strengthened by confirmatory reporting and analysis. Nevertheless, West European and other governments and publics have widely resisted fully accepting the published evidence. Faced with the classic compliance issue of what to do about a detected violation, those governments have exhibited great reluctance to react in a concerted and politically significant way. This reluctance poses a continuing obstacle to a forthright Western response to the violation.

There are a number of reasons for the lack of a concerted international response:

- Initial European suspicions that US charges were motivated by anti-Soviet propaganda objectives.

¹ See annex A for a summary of the intelligence evidence.

- Scientific controversy that erupted over portions of the US case, and was exploited by the media in a manner adding to public confusion and skepticism.
- The fear, harbored by some, that charging a Soviet violation would jeopardize future accords.
- Rationalization that the violation is not of sufficient military significance to warrant exacerbating the already strained US-Soviet relationship.
- The decision by some West European governments to withhold their own confirmatory intelligence findings from their publics in order to avoid domestic political controversy.

The skepticism about the credibility of the evidence survives in part because of the inherent limitations of sensitive intelligence, including the need to protect sources and methods, which fundamentally inhibit its persuasive public use.

In our judgment, the impact on the Soviet leaders of the lack of a concerted and sustained response to their violations may be more significant than the violation itself, as it could lead the Soviets to conclude that violating arms agreements carries no lasting penalty. It may reinforce the Soviet propensity to disregard arms limitation agreements that they believe cannot be effectively monitored or enforced. One lesson that emerges from this analysis is that if an agreement banning chemical warfare (CW) is to be effective there must be not only adoption of stringent verification arrangements but also a Soviet conviction that the West has the resolve to act decisively in the face of discovery of a violation.

The Proliferation Issue

The evidence of Third World acquisitions of chemical warfare capabilities (summarized in this Estimate) shows a proliferation momentum greater than heretofore appreciated.

Soviet military assistance has been a common source and major stimulus to this momentum. Since CW capabilities are integral to the Soviet force structure, the fact that they were transferred through the military assistance program is not surprising. Soviet assistance is likely to continue, hence the momentum will probably be sustained.

Much of the action has been centered in the Middle East, but other areas—parts of Southeast Asia and the Horn of Africa—are increasingly at risk. The attractions of chemical weapons for Third World forces,

combined with a multiplicity of open market sources of chemical materiel, provide further nourishment for this growth. As more nations join the chemical club, a heightened sense of vulnerability is bound to manifest itself. We therefore expect a continued upsurge in chemical warfare activities.

The appearance of chemical agents in local conflicts and the introduction of chemical weapons to regions of strategic importance confront US and allied forces with an increased likelihood that they will become deliberate or unintended targets of attack with such weapons, even quite independently of any direct Soviet role. The risk is as yet small, but is almost certain to grow.

The Western Defense Issue

The appearance and use of novel combinations of chemical and toxin agents, superimposed on the recognition that Soviet and Warsaw Pact forces incorporate chemical weapons as an integral part of their force structure, has intensified existing concerns over the chemical warfare threat. The disparity between Soviet and Western capabilities for such warfare and the deficiencies that NATO forces exhibit in both offensive and protective chemical postures call into question the sustainability of NATO force effectiveness in a chemical- or toxin-contaminated environment.

If present trends continue, NATO will have to recognize the need to reassess its chemical posture, in spite of the political resistance such a reassessment will be likely to encounter.

The Intelligence Issue

The implications of these findings for intelligence are clear: the low priority historically accorded to chemical, biological, and toxin warfare issues—both collection and analysis—must be reversed more radically than has so far been the case. Serious and sustained effort to upgrade collection and to enhance the talent dedicated to analysis can reduce the areas of uncertainty that still plague our knowledge. The substantial improvements recently achieved in CW use collection and analysis should be extended to the entire chemical warfare area. But even allowing for such improvements, there are inherent limitations to intelligence monitoring systems. The Community's ability to monitor a chemical or biological weapons ban will fall short of achieving the high confidence that is widely desired.

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DISCUSSION

Soviet Actions and Policies

Soviet Chemical Weapons (CW) and Toxin Use

1. The fact that the Soviet Union has transferred lethal chemical and toxin weapons to Southeast Asia and has used them in Afghanistan* has caused the US national security community to focus on an aspect of Soviet military posture and policy that has heretofore received little attention—namely that chemical weapons are treated as an integral and effective part of the overall weapons array available for use by Soviet forces in conjunction with either conventional or nuclear weapons.

2. The spectrum of modern chemical agents and delivery systems available to Soviet and other Warsaw Pact forces provides a capability to attack protected and unprotected personnel in almost any tactical or weather condition and to produce residual contamination on equipment, ships, and terrain. In addition, the Pact has vigorous and extensive programs to prepare its forces for operations in a chemical or biological environment.

3. The use of a variety of lethal chemical agents, including some that remain unidentified, has been largely overshadowed by the discovery of a new class of agents—trichothecene mycotoxins—a component of "yellow rain." (u)

4. From the available evidence it seems clear that toxin weapons are considered by the Soviets to be a specific class of chemical weapon whose use would be determined by the tactical requirements. While no separate policy regarding their employment has been identified, there are situations where their use would appear to offer advantages over classical known agents.

* The evidence on these developments is presented in an earlier estimate SNIE 11/50/37-82 (2 February 1982) and a subsequent update, Memorandum to Holders (2 March 1983) both entitled *Use of Toxins and Other Lethal Chemicals in Southeast Asia and Afghanistan*. (u)

5. What is particularly disturbing about the appearance of toxins as warfare agents is the fact that we know very little about the combinations of toxins and other agents that the Soviet Union may have under development. (For a discussion of Soviet toxin development, see annex B). The significance of this is that there may be new agents in Warsaw Pact arsenals far more toxic than the trichothecenes. Moreover, some of them could have chemical and physical properties well suited to combat use that would be difficult to detect and could defeat US and NATO protective measures.

6. There is no doubt that Soviet forces have a substantial capability to conduct chemical warfare operations, both offensive and defensive. Their CW doctrine is well integrated with overall military doctrine, and they have more chemical units, training, equipment, weapons, and delivery systems than any other nation. They are subject, however, along with many other nations, to the international obligations they have accepted constraining this form of warfare. (u)

The Obligations

7. On 5 April 1928, the Soviet Union ratified the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, also known as the Geneva Protocol. As one of the first signatories to the Geneva Protocol, the Soviet Union (as did many other nations) retained two reservations: that the Protocol is binding only as regards relations with other Parties and that it ceases to be binding in regard to any enemy states whose armed forces or allies do not observe provisions. Vietnam acceded to the Protocol on 23 September 1980; Afghanistan, Laos, and Kampuchea are not Parties. (u)

8. The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BWC) was ratified by the Soviet Union on 26 March 1975. This Convention obligates Parties "never in any circumstances to develop, produce, stockpile, or otherwise acquire or retain (1) microbial or other

biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective, or other peaceful purposes; or (2) weapons, equipment, or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict" (Article I). The BWC further obligates parties: "not to transfer to any recipient whatsoever, directly or indirectly, and not in any way to assist, encourage, or induce any State, group of states, or international organizations to manufacture or otherwise acquire" any of the agents, toxins, weapons, equipment, or means of delivery specified above (Article III). Afghanistan, Laos, Kampuchea, and Vietnam are all Parties to the BWC as well. The BWC does not include a specific prohibition on use, as Parties agree that that is covered under the Geneva Protocol. (u)

9. The United States, the Soviet Union, and the great majority of the international community have taken the position that the prohibition on use stated in the Geneva Protocol has become part of customary international law of armed conflict as a result of general adherence to the Protocol, the practice of states in refraining from chemical and biological weapons (CBW) use in subsequent major wars, and the declarations of international organizations. As such, the prohibition would apply to all states and to all conflicts. The Soviet Union has never, to our knowledge, argued to the contrary. (u)

The Violation

10. According to the provisions of the BWC, development, transfer, and weaponization of toxins constitute a violation of the Convention. While Warsaw Pact and US military literature suggests some artificial distinctions among toxins,⁴ it is clear from the BWC

⁴ The 1977 classified East German Manual of Military Chemistry states that toxins selected for military purposes in the 1960s were principally bacterial toxins and thus considered as biological warfare agents. It further argues that since it is now possible to synthesize small molecular-weight toxins, that is, pure chemicals, the situation has changed. Since these nonliving substances differ fundamentally from biological organisms, they should be designated simply "toxin warfare agents" which would be "used in combat according to the same principles and with the same methods used for chemical warfare agents." Other Soviet sources suggest that toxins with a molecular weight of less than 600 daltons be classified as chemical agents and those above 600 as biological. Trichothecenes toxins weigh between 300 to 400 daltons and would, by this criterion, fall into the chemical class.

negotiating record that all toxins, regardless of origin, method of production, or molecular weight, were intended to be covered under the prohibition. (u)

11. The production or possession of toxins for use as weapons in armed conflict is not permissible under the BWC, regardless of the quantities of toxins involved. Therefore, the Soviet involvement in "yellow rain" would be considered a violation of the BWC if any of the following elements is established: (1) that Soviet forces possessed toxin weapons in Afghanistan; and (2) that the Soviets supplied toxin weapons, or quantities of toxins for weapon purposes, to any of the forces in Afghanistan or Southeast Asia; or (3) that the Soviets assisted any of the forces in Afghanistan or Southeast Asia in producing, acquiring, or using toxin weapons or quantities of toxins for hostile purposes. Similarly, Afghanistan, Vietnam, Kampuchea, or Laos would be in violation if possession or transfer of toxin weapons by their forces is established. Intelligence clearly supports a positive finding on all three of these elements, most conclusively on the latter two. It was on the strength of these findings that the US Government, at the highest levels, declared the Soviet Union in violation of the BWC. (u)

Rationale

12. Why would the Soviet leadership risk incurring international opprobrium for an arms agreement violation? (u)

13. First, while we believe that an explicit policy calculus was involved, it is not entirely certain that the initial use and transfer of chemical weapons was in fact the result of a high-level Soviet Government decision. There is a remote possibility that the integration of such weapons in the Soviet force structure and their standard inclusion in Soviet training and doctrine caused such weapons to find their way into local conflict use without highest level deliberation. Soviet persistence, however, in supplying and using these weapons in the face of US demarches beginning in 1979, implies at least awareness and condonement at highest government levels.

14. The decision that resulted was probably impelled by the following considerations:

- *Military effectiveness.* The weapons are, in fact, well suited to the circumstances in which they have been used, that is, in operations against

unprotected, stubborn, highly elusive, irregular forces in mountainous and jungle areas. In some situations, for example, that of the H'Mong tribes in Laos, the terrorizing impact of the toxin weapons has succeeded in driving them out of their highland redoubts.

— *No threat of retaliation.* Soviet and client forces could employ these weapons without fear of reprisals in kind.

— *Operational testing.* The local situations offer favorable opportunities to evaluate the effectiveness of weapons under field conditions. A wide range of chemical weapons were in fact operationally employed and after-action field examinations of victims were conducted.

— *Negligible risk of detection.* Effective Soviet and client state control over access to the regions and the rapid degradation of the agents after dissemination must have argued strongly against the likelihood that outsiders would acquire persuasive evidence of the violation.

— *Unlikelihood of strong international reaction.* The standards of evidence demanded by most governments to enable them to surmount their political and psychological resistance to acknowledging the fact of violation are such as to be in practice unobtainable. Hence, even in the event of such a reaction, the leadership could count on its highly developed propaganda instruments to turn back or defuse any accusation.

15. We have considered and rejected two other hypotheses that could explain Soviet toxin use. One is that toxins were regarded, or perhaps represented by the Soviet military, as a class of herbicides which subsequently manifested unexpected lethal antipersonnel effects. We do not view this hypothesis as persuasive, given the secrecy, tight control, and medical caution often applied to these weapons in the field and the unambiguous antipersonnel manner in which they have often been employed. The other derives from interpretations of international agreements. First, a strict technical interpretation of the Geneva Protocol proscription against use would not imply a violation in Afghanistan, Laos, or Kampuchea, as those countries are not parties. Second, the customary international law extension or interpretation, which the Soviets have

at times endorsed, does not appear to act as an effective constraint on Soviet behavior. As with other arms control agreements, the Soviets have demonstrated that they feel bound only to explicitly stated obligations.

16. The Soviet response to accusations of toxin use has never relied on the above interpretations. Their tactic has been one of absolute denial, counter allegations, and evasive contentions. Among their most vocal retorts to US charges of use is the accusation of US conduct of chemical warfare in Vietnam.* (u)

International Reactions Affecting Arms Control

The European Response

17. We recognize that, while the intelligence findings of Soviet CW and toxin use have been strengthened and reinforced by a steady flow of confirmatory reporting and analysis, acceptance of these findings by governments and publics has encountered strong resistance. Indeed, in spite of a unique US Government effort to make the intelligence evidence widely available, there remains a level of skepticism, particularly among a few vocal scientists, about the validity of the findings. The media treatment of this skepticism and of the CW and toxin use issue generally has tended to accentuate the sense of doubt and uncertainty that is widely shared throughout the West. This uncertainty represents a major obstacle to a forthright Western response to the violation. (c)

18. Western Europe initially responded to the unveiling of Soviet involvement in chemical and toxin warfare with profound skepticism. Political reactions were hesitant and defensive. They were played out in three forums: the Committee on Disarmament (CD) in Geneva, the UN General Assembly (UNGA), and the NATO Secretariat.

19. In the CD, where the CW negotiating effort is centered, the most significant Western response to the revelation of CW use was to press for the conclusion of a comprehensive and verifiable CW ban. While most Western governments exhibit great reluctance to level

*The United States has adopted the interpretation that the Protocol does not apply to nontoxic riot-control agents and chemical herbicides. (u)

charges of CW use, they now recognize the necessity to tackle the difficult verification issue in any CW ban. (c)

20. At the UNGA, unlike the CD, diplomatic activities have sought to draw attention to the CW use issue. The UNGA adopted a resolution in December 1980 to undertake an investigation of the allegations of use of chemical weapons and subsequently extended its mandate for an additional year. As long as the investigation continued, most governments felt relieved of any obligation to speak out on the issue. Since the release of the final report in December 1982, with the cautious finding that it "could not ignore that there was evidence that such weapons might have been used in some cases," we have seen more willingness among the Western nations, notably the French and British, to make public statements condemning chemical use. Other UNGA efforts are under way to develop procedures to investigate future allegations of use and to attempt to improve verification provisions in existing treaties.

21. In the NATO Secretariat, particularly in the Military Committee, the principal response has been one of heightened awareness of Soviet capabilities to use toxins in the European theater and concern about the resulting implications for NATO forces. But constraints at the political level of NATO governments have sharply inhibited serious action on these concerns.

22. How can we explain the subdued Western reaction to the CW revelations? In addition to the basic skepticism already noted, the following factors were at work:

- Initial European attitudes were colored by their suspicion that the United States was pursuing the CW use issue for its anti-Soviet propaganda value and to support its CW modernization program. That suspicion has only partly dissipated, and has reinforced a European determination to distance themselves from what they view as a confrontational US style in East-West relations.
- The initial European reluctance to support the US charges was also due to the paucity of scientific evidence the United States was able to adduce, their own inability to collect and analyze contaminated samples, and their unfamiliarity

with the new analytic techniques that were required to detect and quantify the toxins.

- Failure to take a public stance on the CW use issue is part of a larger European preference for pursuing an independent, more accommodating policy toward the USSR. This preference is rooted in a number of special European economic and political interests vis-a-vis the Eastern Bloc. This orientation and the value they attach to demonstrating progress in the arms control arena, leads them to avoid making public charges of Soviet violations.
- Inordinate political sensitivity to public discussion of CW issues among almost all West European governments acts as a further inhibitor. The West Germans, the only European allies to have US CW stockpiles on their territory, have a real fear of the public outcry that would greet a decision to permit further deployment of chemical weapons on German soil.

24. An important observation about this experience with a detected violation is the fact that the US effort to resolve an arms control compliance issue in the public arena has failed to win vigorous West European support. Despite an unprecedented release of US intelligence findings, Western reluctance continues to inhibit a concerted response. A corollary of this observation is that similar difficulties are likely to be encountered in other arms control compliance areas where technical intelligence findings are relied upon to validate a violation. The special nature and secrecy requirements of sensitive intelligence are such as to impose severe limitations on the ability of governments to present intelligence findings in a publicly compelling way.

25. In addition to these inherent intelligence limitations, several rationalizations are also at work supporting the acquiescence of Western governments in the violation. One is the contention, mostly privately stated, that challenging the Soviets on their violation would have a deleterious effect on the progress of ongoing arms control negotiations and endanger the possibility for reaching new accords. Those making such statements seem to be unconcerned with the consequences for Western security interests of holding enforcement of existing treaties hostage to the negotiation process. First, if failure to respond allows the Soviets to arm themselves in prohibited ways while the West exhibits restraint, instability rather than enhanced security could result. Moreover, it would signal the Soviets that the West is, in fact, unable or unwilling to enforce compliance.

26. Another Western rationalization for acquiescing to noncompliance is the assertion, sometimes publicly made, that because there is strategic parity between the two superpowers, US efforts to enforce compliance are provocative and dangerous. Thus, some would be willing to interpret Soviet violations as not militarily significant and not worth pursuing, since that would hamper US-Soviet relations in other arenas. This is particularly true for the chemical, biological, and toxin weapons which many view as being of no strategic importance and some even consider as having no tactical utility.

27. Many in Europe and elsewhere regard chemical, toxin, or biological weapons as almost as frightful and indiscriminate as nuclear weapons and, therefore, prefer to deny their existence in the hope that they will disappear or be negotiated away. Furthermore, for them, admitting blatant Soviet violation of an existing arms agreement would destroy the argument that treaties are self-enforcing even in the absence of effective verification, because of the high political cost associated with being publicly branded before the world as a violator. (u)

28. The impact on the Soviet leaders of what they may perceive as an inability of the West to deal effectively with the violations probably has greater implications for the West than the fact of the violation itself. The lack of cohesion in the Western reaction could be read by the Soviet leaders as an indicator that they can violate at least some agreements—those most

difficult to monitor—without major costs. The message they have received so far gives them no compelling reason to adhere strictly to their obligations. (s)

29. We do not expect that sufficient public pressure can be brought to bear to arrest what appears to be a sustained Soviet toxin and biological weapons program—a program most clearly prohibited by the BWC. Soviet literature reflects the firm conviction that other major powers possess these weapons and will employ them against Soviet forces in any major future conflict.

30. The implications for the viability of a new chemical weapons convention now being negotiated in Geneva seem clear. Two factors will figure prominently in the Soviet calculus of the risks they would run in the future by violating provisions of the projected treaty: (1) the ability of the Parties to monitor the provisions and detect violations, and (2) the forcefulness of the international response to such violations. If they perceive both of these as being weak, as present evidence might lead them to conclude, there would be little incentive for them to adopt a rigorous policy of compliance. To provide that incentive would require more than the adoption of effective and acceptable verification provisions—in itself a complex task; it would also require that the West muster the resolve to react decisively in the face of evidence of violation. The latter requirement may be even more of a stumblingblock in the arms control regime than the former.

31. We should note that Soviet behavior in the CW arena is fully consonant with the Soviet approach to arms control generally, as described in earlier intelligence and historic studies. According to these studies, the Soviet Union considers the principal purposes of arms control limitations to be those of enhancing its strategic position vis-a-vis that of the United States and reducing the risk of war. The pursuit of strategic advantage outweighs considerations of cost, of controlling the arms race, or of the possible destabilizing effect of particular weapons. They have sought to preserve the military advantages they already possess and to protect the military programs and options they intend to pursue.

32. The earlier studies also affirm that arms control negotiations are used to support other Soviet objectives, which include dividing the Western Alliance and

blocking their specific weapons or modernization programs. An effective propaganda effort directed from the highest levels of government supports these objectives. Much of the propaganda is focused on encouraging complacency among the Western democracies and on exploiting the tendency in some parts of the European political spectrum to equate the mere fact of visible diplomatic activity (for example, arms control negotiations) with progress toward peace and thus, by implication, with a reduced need for a vigorous defense. These attitudes persist despite the mounting evidence of questionable Soviet practices regarding compliance with treaty obligations. While Soviet propaganda does not create the vociferous opposition by peace groups in the West to such issues as INF deployment, MX development, and CW binary production, it at least helps sustain it.

A Decision To Discontinue?

33. Recent indications raise the possibility that the Soviets may have decided to constrain use of lethal CW agents. A review of all available recent intelligence on the use of chemical weapons in Southeast Asia and Afghanistan, including a firsthand survey in the field, reveals a striking reduction in the incidence of lethal attacks since the beginning of 1983 in spite of a relatively high level of combat activity in Laos, Kampuchea, and Afghanistan. Reports of chemical attacks—including lethal events—continue to be received and corroborated by other data, but, for the most part, these relate to events of an earlier period, principally mid-to-late 1982. Moreover, the chemical attacks reportedly occurring in 1983 appear largely to have involved the use of riot-control agents and sublethal concentrations of other agents, mixtures of agents, or mixtures of agents and toxins.

34. While a span of eight months is insufficient time to provide an explanation as to why lethal attacks have decreased markedly, the current decline is unprecedented. We cannot rule out the possibility that a Soviet policy decision to limit the use of lethal chemical and toxin agents may have been taken.

35. There are other possible explanations for the sharp decline in CW and toxin attacks including the fact that the H'mong, who are the principal targets in Laos, are greatly diminished in numbers and are dispersed to the point where they no longer pose a

serious threat. In Afghanistan, where chemical agent use has always appeared to be more selective and limited in scope, a decline in use may be dictated by the changing character of Soviet and Afghan combat operations there or by a finding of Soviet operational testing that the agents are less effective than originally thought. Kampuchea is a more difficult situation to evaluate. We have evidence of continued use of chemical agents and some indications of toxin use in 1983. This continued use could, of course, be explained by the possibility that the Soviets may not be able fully to control Vietnamese use against the Democratic Kampuchians and Khmer. The Vietnamese may by now have acquired a limited indigenous capability to produce and weaponize some agents as a result of technology and training acquired from the Soviet Union. If that is the case, some use of both lethal and incapacitating agents may continue despite a Soviet decision to place tighter constraints on chemical use.

The Spread of Chemical Weapons

The Proliferation Record

36. The past decade has seen an ominous proliferation of chemical weapons acquired by Third World states, especially in the fertile crescent of the Middle East. The increasing public awareness that such weapons are being used effectively under the aegis of one of the superpowers and without evoking much public censure may provide further stimulus to this trend. A brief historic perspective of developments in key countries will provide some sense of the dimensions of the problem. (u)

37. Egypt was the first country in the Middle East region to obtain chemical weapons training, indoctrination, and materiel as part of the sizable security assistance it received from the Soviet Union throughout the 1960s. High-ranking Egyptian officers were sent to Moscow for training at the Soviet Red Banner Academy of Chemical Defense, and chemical warfare capabilities were integrated into the Egyptian force structure under Soviet tutelage. This capability was subsequently employed against the Yemenis in the 1963 and 1967 campaigns.

38. Iraq became a beneficiary of Soviet CW indoctrination and training in the mid-1960s, but their CW

activities remained low key until Iraq's ill-fated invasion of Iran in September 1980. With the adverse turn of events in that war, the Iraqis began a process of direct purchase of chemical agent precursors, munitions for fill, and production facilities from Western Europe and Egypt.

We have identified three possible CW production facilities and two possible storage sites.

39. The effective use by the Iraqis of tear gas (CS) to turn back an Iranian offensive in 1982 has been documented, and there has been reporting of the use of a chemical agent with lethal effects in 1983. If the contracts with West European firms concluded in 1982 and 1983 for acquisition of laboratories, factories, and munitions are fulfilled, Iraq could have a strong chemical agent production capability by the end of the year. CW tactics are not as yet well integrated into the Iraqi military structure, and troop training is weak. These deficiencies, however, can be overcome if the Iraqis recognize them as critical to their security.

40. Syria, also a major recipient of Soviet CW assistance, probably has the most advanced chemical warfare capability in the Arab world, with the possible exception of Egypt. Both Czechoslovakia and the Soviet Union provided the chemical agents, delivery systems, and training that flowed to Syria. As long as this support is forthcoming, there is no need for Syria to develop an indigenous capability to produce CW agents or materiel, and none has been identified.

41. Libya, the largest purchaser of Soviet military assistance (at least in financial terms), must be assumed to have also benefited from Soviet CW indoctrination and training. Its attempts, however, to develop a CW capability since the mid-1970s through the acquisition of facilities and materiel from East and West European sources have met with little success. The Libyans reportedly received some CW agents from Poland in 1980. They probably have a modest supply of protective equipment and riot-control agents for offensive use. We do not believe they possess lethal chemical agents, however, except perhaps for test or experimental purposes. Libya has made efforts to contract with West German and Swiss firms for construction of CW production and storage facilities. Because Qadhafi is

widely viewed as unstable and belligerent, however, Libya has encountered difficulties in concluding these contracts. As long as Qadhafi remains in power, we expect this pattern to continue.

42. Israel, finding itself surrounded by frontline Arab states with budding CW capabilities, became increasingly conscious of its vulnerability to chemical attack.

44. Beyond the Middle East, a number of other countries, principally in the Horn of Africa and in East Asia, have moved toward chemical capabilities. (U)

45. Ethiopia's involvement with CW is also heavily Soviet based. It has acquired chemical agents, munitions, and decontamination equipment as well as CW training from the Soviet Union, but has not developed an indigenous capability to produce CW agents or materiel. There are numerous allegations of Soviet participation in the planning and supervision of chemical operations, but confirmatory evidence is fragmentary. There are also unconfirmed reports of lethal

chemical attacks by Ethiopian forces against selected targets in the areas controlled by the Eritrean People's Liberation Front. Incapacitating and irritating agents have been used during combat over the past several years. Cuban personnel have also assisted the Ethiopians through CW training and provision of protective materiel.

46. *Thailand*, in response to the Vietnamese CW threat, is upgrading its capabilities through acquisition of protective equipment from the West and through improvement of its CW research.

48. Burma has maintained a staunchly nonaligned foreign policy and avoided entanglements with its neighbors. Nonetheless, Burma surely has been sensitized by its neighbors' possession of chemical weapons. However, the most likely target for use of such weapons would be against the significant internal insurgency Burma faces, some of it externally supported.

49. Other countries in East Asia also possess CW capabilities, although less dramatic changes in their programs have been noted in recent years. *China* has a small, though not militarily significant, offensive CW capability.

North Korea also reportedly stores and produces first-generation CW-type agents, but such reports are unsubstantiated.

The Soviet Role

50. While there does not appear to be a common pattern of acquisition of chemical warfare capabilities, a common initial stimulus was imparted by Soviet military assistance. Under the influence of that assistance, Egypt, Iraq, Syria, and Libya all developed their

initial appetites and capabilities for chemical warfare. These acquisition efforts have had an accelerating effect on proliferation in the region as a whole and possibly beyond.

While the evidence is not yet sufficient to allow us to conclude that we are witnessing the onset of a serious chemical arms race, forces and ambitions have been set in motion that will be difficult to arrest.

51. The active Soviet role in stimulating proliferation of chemical weapons seems, on the face of it, inconsistent with their characterization of such weapons as "weapons of mass destruction," a term that is taken by some as signifying special constraints on their use. In the case of nuclear weapons, for example, which are similarly characterized, Soviet policy has been one of strict adherence to the nonproliferation regime, including undeviating insistence on imposition of international safeguards. The seeming contradiction can be explained in three ways: first, the term "weapons of mass destruction" does not, in Soviet usage, carry such restrictive connotation—the term is applied to a wide spectrum of weapons having broad area effects; second, nuclear weapons, unlike chemical weapons, pose a unique threat to vital Soviet security interests, and their potential spread is an anathema in their eyes; and third, chemical warfare capabilities are so completely integral to the Soviet force structure that we should not be surprised to see training, doctrine, and materiel transferred almost routinely as part of their military assistance programs.

Implications

52. Three forces are at work that sustain the proliferation momentum:

- *Soviet military assistance*, acting as both a source and a stimulus. If this military assistance continues—as we have every reason to expect—it is bound to add further fuel to the anxieties that drive the chemical warfare momentum. As more nations join the chemical club, a heightened sense of vulnerability is likely to manifest itself.
- *An open market source of supply*. Numerous non-Communist and Warsaw Pact firms are capable of selling CW protective equipment, train-

the high rates of advance which the Soviets believe necessary for victory in a short war. Prime targets would be airfields, nuclear and logistic depots, command and control facilities, and large enemy troop concentrations. Other important targets might include air defenses, amphibious forces, convoys, and port facilities.

58. From what we know of Soviet doctrine, non-persistent agents would be used to attack targets on a Pact axis of advance and on installations they wished to occupy. Persistent agents would be used to attack airfields and logistic facilities as well as to protect the flanks of Pact forces. Chemical attacks could also be combined with either high-explosive (HE) or nuclear attacks. When combined with nuclear attacks, chemical weapons would be used against targets for which nuclear strikes were not planned. Chemicals used simultaneously with HE munitions would not only cause additional casualties but would also hinder recovery from the effects of the HE strikes by requiring personnel to work in hot and cumbersome protective clothing.

59. NATO's deficiencies against conventional chemical agents encompass the whole gamut of chemical capabilities: detection, identification, protection, antidotes, prophylaxis, and decontamination. While some efforts are under way to ameliorate these deficiencies, the efforts have encountered resistance at the political level by governments suffering budgetary strictures and lacking a sense of urgency.

Toxins: The Added Threat

60. The problem of NATO CW deficiencies is now greatly aggravated by the discovery that the USSR has been developing and using toxins in novel combinations with chemical agents, the precise nature and military effectiveness of which remain unknown. Warsaw Pact military manuals contain large sections on toxins and describe in detail their use not only as sabotage agents, but also as "combat" toxic warfare agents. Like traditional chemical weapons, toxins have a number of potential tactical uses depending in large part on terrain and meteorological conditions. In urban settings and in mountainous or jungle terrain, their use may be more cost effective than equipment- and manpower-intensive conventional sweeps. Like persistent chemical agents, some toxins are effective territorial denial weapons and are especially useful to

deny food, water, and materiel resupply to forces. Toxins may be effective in contaminating potential amphibious landing sites, supply ships, shore facilities, and land routes.

61. Soviet employment of trichothecene mycotoxins in Southeast Asia and strong indications that other toxins have long been under development in the USSR makes it likely that a variety of novel agent combinations is already incorporated in the Soviet arsenal. Some of these undoubtedly have unique properties not heretofore encountered. (u)

62. We know of specific compounds under investigation which appear to have considerable potential as agents (for example, biologically active silicon-containing and organofluorine compounds), and we are aware of some stated Soviet goals regarding agent properties. These enhanced properties include persistence and stability, mask breaking (that is, canister penetration) through microencapsulation, dissemination in submicron-sized particles, and use of special carrier solutions. Penetration of personal protective gear is suggested by coated flechettes and by the hypothesis of silica gel slivers as a component of yellow rain. Extremely rapid-acting incapacitants are also of growing concern. Reports from Afghanistan indicate that such compounds have been used. Open-source literature and intelligence reports describe Soviet research on a sleep-inducing peptide, raising the possibility that other peptides are being developed as CW agents, that is, small, easily synthesized molecules with specific toxic properties and/or with the capability of extremely rapid transfer across the blood-brain barrier.

63. Such novel threat agents raise an additional set of problems, such as the following:

- *Detection.* Detectors presently fielded by the United States and Warsaw Pact countries can detect and identify only standard agent classes: choking, blister, and nerve agents. US detectors cannot detect toxin molecules; we are uncertain about the toxin-detection capability of fielded Warsaw Pact equipment. Improved detection systems may emerge from ongoing analytic work on air pollution detectors.
- *Identification of agents.* This is essential for determining proper treatment, both prophylactic and therapeutic. For most toxins and traditional

agents other than nerve gases, treatment so far is solely supportive and palliative. Considerable research is under way on immunization and antidotes, but in the absence of identification of agents, little progress can be expected.

Protection. In personal protective ensembles, clothing, masks, and so forth, the respirator cannister has the greatest potential for compromise. Multiple-access routes to target organs enhance the likelihood of defeating protective measures. Mixtures of agents could provide an especially effective means of target access, with one serving primarily to defeat protective gear and the other providing a lethal concentration of agent. At present, continuously operating collective protection systems for command posts, vehicles, ships, and aircraft offer one solution for protection against toxic agents.

Decontamination. Decontamination from toxin exposure is probably more readily accomplished than from the more persistent standard agents. For example, VX and thickened mustard are gummy and hard to remove, whereas some toxins when exposed to sunlight and oxygen, are inactivated and others can be washed away with water. Nonetheless, because of their potency, persistence, and low detectability, toxins could pose a significant hazard.

Implications

64. The use of unknown combinations of chemical and toxin weapons in local conflicts and the proliferation of such weapons to a growing number of countries raise two serious concerns. (u)

65. One is the increased likelihood that US and allied forces deployed to Third World regions either as combatants or in a peacekeeping or advisory role may become deliberate or unintended targets of chemical or toxin attacks. Such attacks could be visited upon Western forces quite independently of any direct Soviet role. Western forces will have to be prepared to protect themselves against such an eventuality.

66. A second and far more serious concern is the disparity that is now apparent between Soviet and Western capabilities for and attitudes toward chemical and toxin warfare. The glaring deficiencies NATO

forces display in their offensive and protective chemical posture add up to an inability to detect agents and to disseminate warning; inability to perform combat roles in protective ensembles; critical limitations in nighttime reconnaissance, and so forth. All these call into question the survivability and combat effectiveness of NATO forces in a chemical- or toxin-contaminated environment—an environment that can only be characterized as chaotic, one in which mass casualties and reduced medical and materiel support would heighten psychological stress and severely degrade individual and unit effectiveness.

67. These deficiencies are particularly troubling in view of what we now believe to be the capacity of Warsaw Pact forces to employ novel combinations of agents that can be neither identified nor effectively protected against. It also opens up worrisome possibilities for deceptive tactics designed to degrade the NATO force posture, such as, by combining an irritant with battlefield smokes to cause a unit needlessly to don its protective masks or ensembles, significantly degrading its effectiveness. The use or threatened use of these weapons thus could yield psychological as well as tactical benefits.

68. Given the disparities in capabilities, the militarily significant possibilities these weapons offer, and the increased likelihood that they will be used, the need for a determined reassessment of the NATO chemical posture seems inescapable, even in the face of the political resistance such a reassessment would encounter.

Implications for Intelligence

69. Historically, both collection and analysis of intelligence on chemical and biological warfare have suffered from persistently low priority. Not until after the 1973 Yom Kippur war did the issue receive some recognition, but because priorities are assigned by country, the chemical warfare function still remains underemphasized worldwide.

71. As is true for other weapon systems, our greater difficulty is in obtaining early indications of new emerging weapons while they are still in the research and exploratory development stages. But unlike most other systems, chemical and toxin munitions can be deployed and perhaps even employed without our being able to assess their characteristics (a tank, after all, has a turret, guns, and other features that can be seen and measured—a gas is usually invisible and usually leaves no discernible trace).

ANNEX A

EVIDENCE ON CHEMICAL WEAPONS USE IN SOUTHEAST ASIA
AND AFGHANISTAN

The Findings

1. A Special National Intelligence Estimate of February 1982, subsequently updated and reaffirmed in a Memorandum to Holders in March 1983, found that:

- Lao and Vietnamese forces, assisted by Soviet logistics and supervision, have used lethal chemical agents against H'Mong resistance forces and villages since at least 1976, and trichothecene mycotoxins have been positively identified as ingredients in one of the classes of agents used. Other types of chemical agents have been used also.
- Vietnamese forces have used trichothecene toxins and a variety of chemical agents against Kampuchean troops and Kluner villages since at least 1978.
- The only hypothesis consistent with all the evidence is that the trichothecene toxins were developed in the Soviet Union, provided to the Lao and Vietnamese, either directly or through transmission of technical know-how, and made into weapons with Soviet assistance in Laos, Vietnam, and Kampuchea. It is highly probable that the USSR also provided other chemical warfare agents.
- Soviet forces in Afghanistan have used lethal and casualty-producing agents on Mujahedin resistance forces and Afghan villages since the Soviet invasion in December 1979. Evidence of the use of mycotoxins has been obtained through sample analysis. (u)

attack sites and victims. Scientists

have found in these samples or analyses evidence of toxins and other lethal chemicals. Physical and biological control samples have been acquired in many cases. In none of these controls has the presence of any lethal chemical agent been noted. Furthermore, the particular chemicals and, in general terms, their concentrations found in many samples (when information is available) have been internally consistent with the stories of human observers present at the site of the specific alleged attacks from which they were taken. These consistencies have included method of delivery, symptoms in animals and humans, and aftereffects. In several cases physical and biological samples have been independently acquired from the same sites by different groups. And in a number of cases, controls have also been obtained from the periphery of these attack sites and from age and sex matched control cohorts. A growing list of additional countries are finding independent confirmation of their own.

5. Medical reporting including histories and physical examinations obtained by qualified specialists in tropical medicine, chemical agent effects, internal medicine and dermatology, and forensic medicine have led to the conclusion that lethal agents, including small molecular-weight mycotoxins, have been used. Limited autopsy data available from all three countries support the conclusion that chemicals exogenously supplied by weapons rather than through natural disease explain the preponderance of the findings. Not one qualified physician who has examined victims alleging to have experienced chemical attacks has accepted any alternative explanation as plausible. Similarly, interviews we accepted for analysis were conducted by qualified individuals with training in sociology and anthropology. Possibilities of systematic bias due to cross-cultural misunderstanding, language barriers, folkways peculiarities, and magical thinking are essentially ruled out.

Scientific-Sample Evidence

6. The United States has processed approximately 750 discreet physical and biological specimens from

Note on Methodology

7. Attack data from the above classes were reviewed, recorded, tabulated, and screened for duplication and inconsistency. Attack tables which have been generated in previous assessments were primarily compiled to include only those events that could be confirmed by more than one class of data. All sample evidence of either physical or biological nature was double blinded and submitted with controls. No false positives have been discovered throughout these procedures. All community analyses have been scrutinized by an outside panel of fully cleared nongovernment specialists in medicine, chemistry, and the social sciences. Experts from other countries were also consulted. No alternative scientific or technical explanation has been proffered that diverges from the conclusions expressed in the Special National Intelligence Estimates. Alternative hypotheses ranging from serious to fanciful have been considered and, after investigation, rejected on grounds of scientific indefensibility. (u)

ANNEX B

SOVIET DEVELOPMENT OF TOXINS

1. The use of a variety of lethal chemical agents in Laos, Kampuchea, and Afghanistan has been largely overshadowed by the discovery of a single new agent—trichothecene mycotoxins—a component of "yellow rain." (u)

2. Much remains unknown about the overall Soviet chemical warfare (CW) program. We have a fairly good understanding of its historical development, some sense of its research direction, but only sketchy knowledge of current doctrine. Some delivery systems for classical CW agents are known, dispersion patterns and concentrations for such agents have been projected, and fatality estimates formulated. No such plethora of data exists for new chemical agents and toxins that have been employed in these regional conflicts. Recent intelligence attention to Soviet toxin research has brought to light some additional information that raises our concern about the threat we face.

3. Until recently, US intelligence on toxic agents of interest to the Warsaw Pact has emphasized those agents known to exist during and shortly after World War II, such as the mustards and nerve agents. Evidence exists, however, that the use of toxins as combat weapons is not a newly developed or experimental Warsaw Pact concept, but that the trichothecenes may have been part of the Soviet arsenal for decades.

4. A 1951 intelligence report written by a captured German chemical warfare expert, Dr. Walter Hirsch, contained detailed information on Soviet chemical R&D programs from 1939 to 1945, resulting from his Soviet POW interrogations. Among the new war gases under development in the Soviet Union during that period was a "powdery, yellow-brown" agent called *lebeda*. The word *lebeda* in Russian refers to a millet-like feed extender, an indirect reference, no doubt, to the trichothecene-contaminated millet that caused the devastating disease outbreaks in Orenburg in the

Soviet Union during and after World War II. Beginning in 1941 and continuing until Hirsch's capture, the new agent *lebeda* was mentioned repeatedly by Soviet prisoners of war who had technical training or connections with Soviet CW schools. Hirsch was not able to identify the agent on the basis of its described properties, but noted an array of symptoms that bear striking similarity to those observed in yellow rain victims. Interestingly, the agent was also described as being disseminated in munitions or as an aircraft spray.

5. A prominent scientist who left the Soviet Union in 1958 has provided additional insight into Soviet trichothecene R&D. As an investigator of the Orenburg outbreak, he traced the origin of the epidemic to natural contamination of grain sources by toxin-producing *Fusaria*. Having identified optimal conditions for toxin production by the fungi, he was ordered to supply large amounts of toxic culture extracts to other Soviet scientists for classified research projects. Subsequent Soviet toxicity studies in humans involved addition of various doses of the toxic material to ground meat which was then fed to political prisoners, and the course of development of toxic effects was monitored. Inhalation experiments were also conducted using monkeys. Techniques for enhancement of toxic effects by combining toxins of different types were also investigated. Extensive debriefings of this source have led us to conclude that his technical bona fides are impeccable and that the striking claims he continues to recall and support are highly credible.

6. The Soviet Union has maintained active research projects in all aspects of natural toxin research on a scale many times more extensive than one would expect solely on the basis of agrotechnological or epidemiological R&D. The research is well supported, involves both military and civilian investigators, and in many cases has been linked with facilities associated with CBW research and development.

At no change in the level of these

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activities occurred after ratification of the Biological
and Toxin Weapons Convention.

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