BW Working Group Meeting

National Academy of Sciences

Washington, D.C.

February 7, 1989

Summary Minutes

A meeting of the NAS Committee on International Security and Arms Control Working Group on Biological Weapons took place on February 7, 1989 from 10:00 a.m. - 4:00 p.m. at the National Academy of Sciences. Present were: Joshua Lederberg, chairman; Robert Chanock, Thomas Monath, Alexis Shelokov, John Steinbruner, Wolfgang Panofsky and Lynn Rusten. Robert Mikulak attended the first hour.

Rusten reported that the Soviets indicated they were inclined to accept the proposal for a joint meeting in London on April 1-2, but that their acceptance was not yet definite. Lederberg reported that Ivanov had indicated general agreement with the agenda and dates, but had suggested there might be a change in the Soviet chairmanship from him to Petrov. Firm information from the Soviets is expected shortly; planning will proceed with the expectation that the joint meeting will occur on April 1-2.

Robert Mikulak, a senior scientist in the Bureau of Multilateral Affairs at the US Arms Control and Disarmament Agency, gave a presentation on the current status of BW and CW issues in the government. Noting that CW proliferation had become a prominent concern, he said legislation being considered on the Hill to impose sanctions against CW use and perhaps against companies that assist CW programs in other countries may be broadened to include BW. He predicted that the Administration and Congress would work together to develop sensible legislation. He said there was interest within the government in designing a CW non-proliferation regime modeled after the nuclear non-proliferation treaty regime.

Mikulak said the US government had not been involved in discussions with the Soviets about BW proliferation as it has been with the Soviets on CW proliferation.

Mikulak then made some comments on those aspects of the draft treaty on CW which might have some spillover to the BW issue. First, he said that toxic chemicals, which are explicitly prohibited by the Biological Weapons Convention, will also be prohibited under the CW Treaty and therefore some of the CW verification provisions such as challenge inspections would be applied to the toxin aspects of the BW field. Second, Mikulak said there was an explicit understanding with the Soviets that the next BWC Review Conference, which will probably take place in September 1991, will evaluate the CW verification provisions as they apply to the BWC.

Mikulak then made some remarks about the annual data exchanges in which BWC signatories voluntarily participate. He said the Soviets want more information on the US BW Defense Research program, including a complete list of all facilities involved in the program. The US wants more information on the Soviet military BW program. He said both countries are involved in urging some of their own allies to participate in the voluntary data exchange.

Lederberg asked Mikulak what good ideas had emerged as to how to deal with the CW proliferation problem. Mikulak responded that there were no simple solutions; the main ideas are to employ export controls and political pressure to slow the proliferation down.

Mikulak said the CW draft treaty had three main categories of verification. First is inspection at declared military facilities to verify the declared baseline and to monitor non-production and destruction of chemical weapons. Second is random inspection at certain commercial production facilities where defined key precursors are produced. Third is a regime to deal with undeclared facilities that did or could produce chemical weapons or the defined precursors. However, Mikulak said there was no agreement on whether this regime would rely on random spot inspection, a challenge inspection scheme for individual facilities that cause concern, or some other scheme. He recalled that the US proposal originally called for anywhere,

anytime challenge inspections to which military facilities, government-owned facilities and specifically defined private facilities could be subject, and that the Soviets had agreed. In discussion, it was predicted that this provision will probably not survive in the final version because ultimately the signatories will insist on a right of refusal. There was a discussion of incentives and disincentives for misuse of the challenge inspection provision and what could be done after a refusal of a challenge inspection. Mikulak said there was also the problem of detecting undeclared facilities. He noted that proprietary concerns were prominent for the US chemical industry, which is concerned mostly about inspections by representatives of Japanese or Western competitor countries.

Mikulak said the treaty would create a new international agency for verification of the CW regime which would copy some of the positive aspects of the IAEA. It's expected to have a one million dollar annual budget and employ some hundred inspectors. Who pays has not yet been worked out.

Mikulak left the meeting.

At the request of Lederberg, Panofsky, chairman of the NAS Committee on International Security and Arms Control, said a few words about the committee's upcoming activities. In a discussion of CISAC's rules about exchanging papers with the Soviets, Panofsky said the general rule was to avoid it unless the paper was of such technical detail that sharing the paper was essential to ensuring that the content was fully absorbed by the Soviets. If papers are shared they should clearly be individually authored papers and not be labeled as committee or Academy products. Panofsky also stressed the CISAC groundrules of declining to sign on to joint agreements or communiques.

Turning to the BW working group's preparation, it was agreed that the next planning meeting would take place on March 3 in Lederberg's office in New York.

Turning to the agenda for the bilateral meeting, Lederberg said he owed a paper on the definitional problem posed by toxins. He said his paper would say that it is the method of

production, not the material, which defines the toxin. However, he acknowledged this raised a verification problem because one could not tell from the substance whether it was produced naturally or synthetically. He said he would write up his thoughts in more detail for the March 3 meeting.

Lederberg then opened discussion on the question of delineating permitted from prohibited research under the BWC, noting that both Steinbruner and Chanock had prepared papers related to this question.

Steinbruner said the difficulty he faced in writing his paper was with the quantitative specification of the thresholds for disclosure and prohibition. Chanock said that in Steinbruner's class IV category, flu was the only thing for which such large quantities of agents are stored. He suggested as an alternative setting a much lower threshold for that class, but exempting flu. Lederberg said the response to an outbreak of virulent flu would be to produce a large quantity of vaccine, and therefore it is intent, not quantity, that is important. Steinbruner explained that was the purpose of having a lower quantitative threshold for disclosure whereby there would be an obligation to disclose and explain why that quantity of agent was being produced. Then there would be a higher quantitative threshold, the exceeding of which would be prohibited except by some kind of agreement.

Monath remarked that there was a problem with Steinbruner's creating a new scheme when one already exists based on biosafety, and furthermore it was confusing because of the reversal of categories from most dangerous to least. Second, Monath suggested that the numbers for Steinbruner's class I and II were probably too low.

Steinbruner explained that his notion was to have a restrictive threshold for disclosure which would trigger an obligation to explain what you're doing. It would not be a threshold over which production would be prohibited; that would be set at a higher level.

Monath said it was necessary to separate research from development and production of vaccines. Steinbruner said this

discussion illustrated the problem that there is always the excuse with large quantities that you're making a virus. Monath said this gets into the issue of disclosure.

Chanock said we could adapt the biosafety level system. It doesn't transfer exactly because it does not take into account transmissibility.

Monath said one should consider transmissibility, virulence/lethality and escape into nature, and that many of the same issues were taken into account by the biosafety level system. He said most agents fall into Steinbruner's class III and IV. He agreed the biosafety level system needed modification for our purposes, and noted that toxins presented a problem.

Regarding classification problems and the overlapping jurisdiction of the BWC and the future chemical weapons treaty regarding toxins, Lederberg posed the question of, "Which toxins is it legal to own?" For instance, should there be a limited list of substances, like the CW precursors, which would be illegal or regulated? Monath said the list of agents is relatively small and it seems they could be agreed upon by both sides.

Chanock said offensive activities could be distinguished from defensive activities if the stuff in the pipeline is coupled to a verifiable peaceful end use. He said only a small percentage should be allowed to be alive at any one time.

Monath said the issue of quantity should be tied to intent. A certain amount will always be in storage. If a scale-up occurs (1000-fold perhaps), the issue is to be able to document intent to vaccinate or some other peaceful purpose.

Following a break for lunch, Lederberg noted that the discussion kept coming back to intent. He asked if there were any objective criteria. He asked if there was any reason not to disclose vaccines.

Monath said the issue was one of revealing deficiencies in our BW defense capability. Steinbruner said you could announce that you've exceeded the threshold without giving the amount.

Steinbruner said the percentage of live virulent virus in stock would be a disclosure threshold. Lederberg said a limit at any time of no more than 10% live virus of what's been accumulated in vaccine would be reasonable.

Monath suggested splitting it into amounts for research and amounts for scale-up. Steinbruner explained that his scheme assumed that amounts below the disclosure threshold are for research; amounts above that get into scale-up. If you're above the second threshold, the threshold for prohibition, there should be a prohibition on producing those quantities except by mutual agreement.

Lederberg asked what about when there is no vaccine involved, when its just live virus. Shelokov said all P-IV activities should be declared. Monath said to use number of organisms instead of infectious doses, and define how you're counting organisms. Lederberg said infectious particles is the criterion. Monath said infectious units.

Lederberg summarized that there had been agreement 1) that vaccines should be disclosed if more than 100,000 doses, and less than 10% should be in live virus; 2) that all agents at all military labs should be disclosed (but the cost is that it lets the other side know what we're not doing); and 3) that at civilian labs, all work on a certain set of specified viruses which would include all P-IV level agents and certain specified P-III level agents should be disclosed. Monath said the criteria for P-III level agents in civilian labs to be disclosed should be that they are transmissible by aerosol and cause potentially lethal disease. Everything else would be exempt from disclosure.

It was agreed that Chanock, Monath and Shelokov would independently draw up a list of the P-III agents which meet these criteria and then compare their lists. They will consult the P-III NIH Biosafety pamphlet and eliminate those agents that are not potential BW.

Monath asked what about animal and plant pathogens that are common in one country, but exotic to others. It was agreed to defer this issue for now.

Lederberg asked what about prohibition? Chanock said recombinants that are transmitted with high efficiency and express a potent toxin should be prohibited. He said none exist yet.

Lederberg said he would write something up on recombinant research. Chanock might also and if so, they'll compare notes.

Monath then made some remarks on the small pox issue. He said the Soviets do continue to vaccinate troops against small pox. Monath made three points: 1) there is confusion about the value of small pox as a BW agent; 2) it is uncertain whether the USSR and East bloc countries have ceased all civilian small pox vaccination and it would be interesting to ask our Soviet counterparts about this; and 3) there is a question about whether there's ongoing military research on this in the USSR. Monath said one idea was to have a joint US-USSR research project on sequencing the entire variola genome and then have both sides agree to destroy all existing stocks. Monath said all NATO countries are vaccinating troops against small pox.

There was then a discussion of how to verify a ban on vaccination and stockpile disposal. It was agreed that some random sampling of recruits would be useful for verifying the ban on vaccination, though the ban could be circumvented without detection.

Monath said he thought a more significant step would be to take blood samples from people working in the labs that have the vaccine in their vaults, particularly in military research institutes.

Monath said he thought if the Surgeon General and the Soviet equivalent sent down a rule that vaccination would cease, we would have means sufficient to know if violations were occurring on a grand scale. Lederberg asked Monath to look into what would be adequate verification to allow the US to discontinue the practice.

Monath reiterated that an exchange of sera from military lab personnel would be interesting.

Lederberg said it might be useful to send the Soviets some advance material on the small pox issue so that they come prepared to discuss it.

Lederberg said greater openness through exchange of scientists was still one of the most useful confidence building measures, and said he wanted our group to promote this. Rusten mentioned that one potential source of embarrassment could be that we would promote and facilitate such exchanges only to find that the State department was denying a lot of the Soviet scientists' visas. She explained that there has been great sensitivity in the US government on this issue on the grounds of concern about technology transfer. She agreed to report further on this issue at the next meeting.

On the subject of how to conduct on-site visits, Lederberg suggested, and Shelokov agreed, that Shelokov use Swiftwater as a prototype for the pre-visit data exchange that Shelokov recommended in his working paper so that he will actually bring to London all the information suggested to be provided in advance of a visit. Shelokov agreed to work on this providing he gets appropriate clearance.

Lederberg's only suggestion on Shelokov's paper was that the educational background of lab personnel also be provided (where and when degrees were received).

There was a brief discussion of Monath's paper on disclosure and of the adequacy of the data supplied by the US in the BWC data exchange. There was general agreement that, on balance, it would have been desirable had the US submission been more forthcoming.

Lederberg agreed to think about any further assignments for the March 3 planning meeting. The meeting adjourned at 4:00 p.m.

Lynn Rusten