HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

24 July 1981

Mr. Julian Perry Robinson
Science Policy Research Unit
Mantell Building
University of Sussex
Brighton BN1 9RF
ENGLAND

Dear Julian,

My comments on the enclosed Issue Brief were written in response to an earlier version, not the published one which I am sending you.

As ever,

COMMENTS ON MAY 1981 "CHEMICAL WARFARE: BACKGROUND AND ISSUES"

Page 1:

- The statement that "binary nerve agent weapons would be significantly safer to store and use ..." is disputable. The hazard associated with unitary munitions has been exaggerated. Unitary artillery projectiles have not been demonstrated by experience or by risk assessment studies to constitute a serious hazard. Indeed, in some respects, such as the problem of liquid trailout and unexploded duds, binary rounds may be less safe.

- It should be stressed that the analysis of possible US chemical needs is in a state of rapid flux. It is important to realize that there are not any mission-based and validated requirements for specific chemical munitions. It should also be pointed out that there have been no congressional hearings that have explored the essential questions raised by proposals for resumed chemical weapons production.

Page 2:

- US policy on chemical warfare has not been consistent in calling for no first-use. In the late 1950's and early 60's, the US position became ambiguous. For example, in 1960, the Departments of Defense and State opposed a resolution proposed by Congressman Kastenmeier which called for reaffirmation of a no first-use policy (Chemical-Biological-Radiological (CBR) Warfare and Its Disarmament Aspects. Subcommittee on Disarmament of the Committee on Foreign Relations. US Senate, 86th Congress, 2nd session. Committee print. 29 August 1960). At about that time, US national policy was changed from "no-first-use" to "presidential option".

- It may be misleading to state "production of biological agents was continued only for defensive purposes." It would be more accurate to say research on biological agents was continued only for prophylactic and protective purposes.

Page 3:

- It is not correct to say that the "technical advantages of binary munitions seem to be accepted by both the supporters and most of the opponents ...". Binary munitions have a number of potential technical disadvantages, as compared with unitary ones. These include ballistic uncertainties and variability, problems of front-line assembly, distinctive sound signature, greater temperature dependence, and hazards associated with duds and liquid trailout, among others.

Page 4:

- "... significant civilian casualties would result ..." fails to convey the results of relevant studies which indicate that millions of civilian deaths could occur in a european chemical war. The word "significant" should be replaced with a more informative adjective, such as "millions of".

Page 7:

- Point #1 should be split in two: 1) there is no definitive evidence as to whether the Soviet stockpile is larger or smaller than the US stockpile; and 2) it is not known whether the Soviets have or have not appreciably increased their chemical weapons stockpile since the US stopped production.

- An important point that follows from these uncertainties is that proposals for enlarged US chemcial weapons programs may stimulate a chemical arms race, to our long-term disadvantage.

- It is not clear that "the Soviets have been continuously developing their chemical capabilities ...".

Page 8:

- A significant factor that must have affected Soviet calculations was the major US build-up of chemical munitions during the period 1950-68, when we were one of the few major nations that still had not ratified the 1925 Geneva Protocol. This should be cited.

- The statement about forward deployment exaggerates the known situation.

- References to stockpile rations need qualification in view of the uncertainty even as to whether Soviet stocks are greater or lesser than those of the US.

Page 9:

- It is debatable whether Soviet chemical capabilities are "the most extensive ...".

Page 10-11:

- The argument regarding adoption of rubberized garments by the Soviets makes little sense technically. It should be omitted.

Page 11-12:

- The discussion should reflect more closely the analysis given in the June 1980 DIA report on Soviet defensive capabilities. Their existing tanks are said not to have chemical protection. It is expected that their newer ones will, although this remains to be seen.

- Soviet chemical defense troops are estimated in the DIA report at approximately 50,000, not 80,000-100,000.

- I know of no reliable evidence that the Soviets routinely use diluted, lethal chemical agents in troop training exercises.

Page 13:

- While there is undoubtedly some emotion on both sides, I question your implication that it is the arguments against chemical weapons that depend mainly on emotion. More important, the argument for chemical weapons has not been subjected to the military analysis customary for other weapons for which procurement requirements are issued. Indeed, within the Defense Department, the arguments for chemical weapons have generally not been based on detailed military analysis at all.

Page 14:

- Contrary to the sentence at the top of the page, the US did develop a strong offensive chemical capability after WW II.

- The last paragraph fails to reflect that the stockpile requirement reportedly favored by the Joint Chiefs is likely to represent the upper limit of the available crude estimates for such requirements. The Joint Chiefs generally release requirements far in excess of eventual agreed requirements in many fields, such as conventional ammunition, number of aircraft wings, etc. I believe that our stockpile of chemical artillery munitions is quantitatively adequate, and that statements poor-mouthing it create a false impression and reduce its deterrent effectiveness.

Page 15:

- It is correct that US forces in europe could not make use of 105 mm artillery projectiles. However, it is important to add that some european NATO allies do retain 105 mm tubes in considerable number and these are compatible with our 105 mm chemical rounds.

- You do not mention 105 mm, 155 mm, and 4.2 inch mustard munitions. It is wrong to neglect mustard; in overall effectiveness, it can be competitive with nerve agents.

Page 16:

- In real measurable terms, just what are the safety problems associated with storage and transportation of unitary artillery projectiles? Do you know of any sound evidence that there is any substantial hazard? As for disposal, new batch incineration methods now being considered could make the safe disposal of unitary weapons much cheaper.

- It is implied that binary weapons are superior to unitary ones because of "greater variety, increased safety, larger stocks, simpler handling procedures, and greater variety of deployment options ...". I do not consider that any of these points is well-established in regard to binary weapons of current design. What is the evidence?

Page 17:

- Deploying only part of the binary components does not address european concern regarding civilian casualties. What evidence is there that this "technological fix" addresses any real problem?

Page 18:

- The importance of the Yom Kippur war findings is exaggerated. The former president of Israel, Katchalski, says that all they found that was new to them were bigger blowers in the personnel carrier ventilation systems, and the antidote TAB. The tanks did not have chemical filtration, and we now know that our reaction to TAB was incorrect. The antidote is defective and may have been purchased by the Egyptians commercially rather than having been provided by the Soviets.

Page 21:

- I know of no reliable evidence that Soviet troops use actual lethal agents (such as nerve or mustard) in their training exercises.

Page 23:

- The words "distinct possibility of significant civilian casualties" understate the problem. "Millions of civilian casualties" would be more accurate.

Page 24:

- You should add that binaries are much easier to produce than unitaries because elaborate precautions are not necessary to protect the workers. Ease of production is an important advantage for others, but not for the US. It is against our interest to make chemical weapons production easier for others.

Page 25:

- The statement attributed to General Myers should be quoted exactly and referenced. Some analyses I have seen suggest that retaliation with chemicals instead of competitive weapons might contribute to losing rather than to winning.

Page 26:

- May I suggest the following wording for paragraph 2: " ...his expertise on the subject of chemical warfare emphasizes that the wearer of chemical warfare protective equipment is much more vulnerable to conventional explosive weapons than to chemical weapons."

- The use of chemicals in WW I included heavy use of mustard against the allies during the last 14 months of the war. This provides some real world basis for evaluating the consequences of chemical war. When it is taken into account that mustard is quite an effective agent, that more than 3 million rounds were fired by the Germans at the western allies, that WW I protective equipment was greatly inferior to present euipment, and that conventional competitor weapons (improved conventional munitions etc.) are much more effective than WW I weapons -- the experience of WW I strongly suggests that battlefield chemical warfare would be of low military effectiveness in a european-type war of the future. Taking the trade-offs into account, it might be, in many cases, counter-effective.

Page 28:

- I do not agree that symptoms reported from Afghanistan suggest nerve agents. I doubt that any knowledgeable person would now consider nerve agents probable.

- I think the simplest explanation for the many effects, including numerous deaths, reported by Lao tribespeople, is that they were exposed to agent DM or a related compound, and also drank water in which the agent had hydrolized.

Page 29:

- Although the talks began in 1976, serious negotiations did not begin until the summer of 1977 when the US first presented a negotiating position.

Page 30:

- Whether or not US chemical weapons production affects the possibility of reaching a treaty, there is a different point worth adding, namely that such production may stimulate a chemical arms race counterproductive to us.