



## WORLD HEALTH ORGANIZATION COLLABORATING CENTER

FOR REFERENCE AND TRAINING IN

REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEMS FOR VETERINARY PUBLIC HEALTH

M.E. HUGH-JONES, M.A., VET. M.B., M.P.H., Ph.D., M.R.C.V.S.  
DIRECTOR

Louisiana State University School of Veterinary Medicine  
Department of Epidemiology and Community Health

3 January, 1994

Dr. Mathew Meselson,  
Dept of Biochemistry & Molecular Biology,  
HARVARD UNIVERSITY,  
7 Divinity Ave.,  
CAMBRIDGE, MA 02138

FAX: 1 - 617 - 496 2444

Dear Mathew,

Please excuse my delay in getting back to you but family and the holidays got in the way. Before I forget, congratulations on being appointed to the CISAC committee. I suspect that you have been wanting that for some time.

THE paper:

AUTHORSHIP:

I have no problems with Alex Langmuir nor did I raise them earlier as I knew that he had been helping y'all out. Added to which it is a nice posthumous recognition of his involvement. Popova in my view is a technician in that she was paid for her help, but if you want to include her as we do sometimes in such circumstances fair enough. Olga was a member of the team. Your holding out against David gives the impression, rightly or wrongly, of a private agenda. Now let me let you into something on the structured aspects of epidemiological investigations, that Alex may have overlooked when holding your hand at Woods Hole, and it goes back to the basics of such investigations. In fact it is part of the tradition of such investigations and was probably codified by him when he first set up the EIS training programme at CDC. There are eleven investigation "steps" ending up with "Write your report". The first is "Verify the outbreak". The second is "Verify the diagnosis". Extremely important and I can tell you from personal experience that life gets complicated when you skip it or take the original diagnosis for granted. David played a vital part in that Step 2. He independently confirmed that [1] we were dealing with anthrax and [2] that it was pneumonic anthrax and [3] that there were no cases of enteric anthrax ... something we would have had to take on trust otherwise from Abramova & Grinberg. It radically strengthened our investigative hand. This goes beyond mere pathology. I suggest that you check my comments on the classical CDC investigative steps with Alexis and the importance of Step 2.

**BODIES:**

Spirina: She does seem to fall into the 50% probability range - Lev says 'no', David says 'yes', and Jerry says 'she cannot be ruled definitely in or out'.

Dead Young Man: Jerry/Lev's detailed pathology has him dying on 10th June (69 days) based on the level of autolysis. I suggest that you give him an "726" age. Also put him at the end of the deaths. *ok*

Clinical Cases:

ID#s: It is confusing to give these people ID#s as they get confused with the Official Numbers of the Dead - why don't you just list them a to j. *ok*

[a] Those beyond Nikiporov's five must reflect some interviewing successes by Jeanne & Ilona? And they do confirm some details from Ilenko, which is nice. Were there any such interviews that did not? *yes*

[b] Fedulov (81) and Fedulova (82): This is a nice domestic cluster, which Burgasov had denied. Does Fedulov have initials? *both are certainly one by cluster*

[c] Poleshaeva (85) and Andrei Pavlovich Polezhaev, aged 74, and is buried in the East Cemetery along with the other anthrax cases. Why do you include the daughter and ignore the ?father. By the bye, my analysis of the graves indicate that he probably died on the 9th April. Or have I got a different transliteration and he was Valeriy Deodorovich Poletaev (12) who died on 12th April?

Dead Russians:

Tischenko (68) - thanks for the birthdate/age correction. Were there any other changes, additions/subtractions, on the second Mishustina list? *no*

Tipikin (32) - I have a note that he died on the 16th April. I have yet to trace the source.

Myasnikova (19) - from the placing of her grave she died on the 12th April.

Tarassenko (8) - ditto 14th April.

Aerosol Calculations:

Two problems - in spite of TNO's concordance, of which I am independently aware.

LD50 @ 4000 spores: The Glassman-Jemski exercise used an anthrax sensitive species of monkey. Through your committee involvements

Lev:  
Dated as  
Negative  
No new nodes  
Jerome Smith:  
Did not die of anth  
expected med. fib.  
- almost none  
No transmission  
No human  
nodes

Not the  
daughter of  
Poleshaev or  
Poleshaev  
Poleshaev is  
included,  
as he is on  
off list.  
Poleshaev is  
not on off  
list.  
no other links.  
address is a  
mistake for  
him.

with BW you are aware of published and unpublished exposure experiments by others at USAMRIID and Forton with other monkeys that consistently indicate an LD50 in the  $10^{**4}$  range, in spite of Erlick's statement. Because everyone else has limited their numbers of monkeys to just get the LD50, the shapes of the probit curves for the other species are not known though suspected. To test the robustness of your results, you would be advised to rerun your model at a higher LD50 to see what difference it makes; you might assume a jacked-up Jemski probit curve in the absence of any hard information to the contrary.

**Zero deposition:** This does worry me greatly. You assume a perfect aerosol from the gitgo, which is at best extraordinarily controversial.

**Sheep @ Abramovo:** the copy of your calculations that you so kindly sent me had a maximum dose of 0.55 spores at that village. This does not quite match your script as being capable of killing a sheep.

All in all I am reminded of Captain Marryat's nurse in "Midshipman Easy". Her excuse was that it was a very little baby.

The paper is looking much better.

Best wishes for the New Year,

yours sincerely,



Martin Hugh-Jones

cc: AS

Horovitz

Dr. C.T. Horovitz  
19 Mainsail Dr  
CORONA DEL MAR, CA 92625

Prof. Matthew Meselson  
Harvard University,  
Fairchild  
Biochemistry Building  
7 Divinity Ave #363

Cambridge MA 02138

January 5, 1994

Dear Professor Meselson,

My friend and walking partner Mr. Harold Gold, told me about your expertise, which includes also a large knowledge concerning trace elements, and he was nice enough to give me your address.

I am retired from my former research activity in Israel, Germany, and Rumania, where I was involved in the investigation of the biochemistry of some trace elements.

I am using the facilities at the libraries of the University of California, Irvine, and I am in a final stage of writing the book "Biochemistry of Scandium and Yttrium", which is intended to be published by Plenum Press, in the series "The Biochemistry of Elements". Enclosed please find its table content.

I would be interested in knowing your comments about the involvement of trace elements, in particular polyvalent metals, like lanthanides, scandium and yttrium in various biological systems.

With many thanks for your kind reply, I remain,

Sincerely yours,

Chaim T. Horovitz

JAN 9 1994

Content of the book "BIOCHEMISTRY OF SCANDIUM AND YTTRIUM"

C. T. HOROVITZ

Hebrew University of Jerusalem, Faculty of Agriculture, Rehovot.

Plenum Press, New York, ~400 pages.

Preface

- Chapter 1 History of Yttrium and Scandium
- " 2 Chemistry and Physics of Scandium and Yttrium
- " 3 Analytical Chemistry of Scandium and Yttrium
- " 4 Distribution of Scandium and Yttrium in Nature
- " 5 Occurrence of Scandium and Yttrium in Living Matter
- " 6 Interactions of Scandium and Yttrium with Molecules of  
Biochemical Interest
- " 7 Interactions of Scandium and Yttrium with Subcellular  
Organelles, Cells and Tissues
- " 8 Biochemistry and Physiology of Scandium and Yttrium
- " 9 Toxicology and Pharmacology of Scandium and Yttrium
- " 10 Biochemical and Other Techniques Which Employ Yttrium and Scandium
- " 11 Future Prospects of Yttrium and Scandium

Indexes

JAN 19 1983

*Canonne*

UNIVERSITY OF

SUSSEX  
AT BRIGHTON**SPRU**Science Policy  
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Telephone: (0273) 686758  
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TO:

DEPARTMENT:

ORGANISATION:

FAX NO:

*M. S. Nelson*  
*0101-617-496-2444*

FROM:

*Julian Robinson*Total Number of Pages Transmitted (Including Cover Page): *3**Please contact Robyn Forman on the above telephone or fax number or direct line Brighton [\*44 273] 678177 if there are any problems concerning this transmission.*

MESSAGE:

*then is the Canonne correspondence.*

Dr Pierre Cannone  
CEFFIAC  
24, avenue Prieur de la Côte d'Or  
94114 ARCUEIL Cedex

France

23 October 1993

Your ref: No81DEF/CEFFIAC/PC

*By fax to 01033.1.49.12.30.97*

Dear Pierre,

I am so sorry that your letter of 6th September, which arrived while I was away, should have remained unanswered for so long. It was very good to hear from you. I do hope the first session is going well. I find myself peripherally involved -- as one of the lecturers -- in the UK course and I am looking forward to seeing how it develops.

A copy of the latest *Chemical Weapons Convention Bulletin* is enclosed. I will make sure CEFFIAC is on the mailing list for future issues.

We would be delighted if you would contribute to the *Bulletin*. An article on training would be of widespread interest, the more so if you were to draw from the experience of the first CEFFIAC session. If you could get something to Matthew Meselson (who is in charge of guest articles) by the last week of November, we might well be able to run it in the December issue.

With best wishes,

J P Perry Robinson  
Senior Fellow

cc Dr M S Meselson



CENTRE FRANCAIS DE FORMATION POUR L'INTERDICTION DES ARMES CHIMIQUES  
24, avenue Prieur de la Côte d'Or - F - 94114 ARCEUIL Cedex  
Tel. : 33.1.49.12.30.19 - FAX : 33.1.49.12.30.97

REPUBLIQUE FRANÇAISE  
MINISTÈRE DE LA DÉFENSE

Paris, le 06 septembre 1993

N°81DEF/CEFFIAC/PC

Dr. Julian PERRY ROBINSON  
University of Sussex

Dear Julian,

As you know, France has set up a training center for the prohibition of chemical weapons.

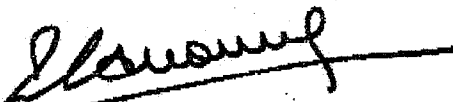
The first session will start on September the 13 th. Twenty trainees from seventeen member States (China, Pakistan, Romania, Greece, Bulgaria, Russia, Poland, Italy, Germany, Ireland, Algeria, Argentina, Mexico, Cameroun, Ivory Coast, Marocco and of course, France) will participate until December the 17 th to numerous, various activities in all fields related to the CWC.

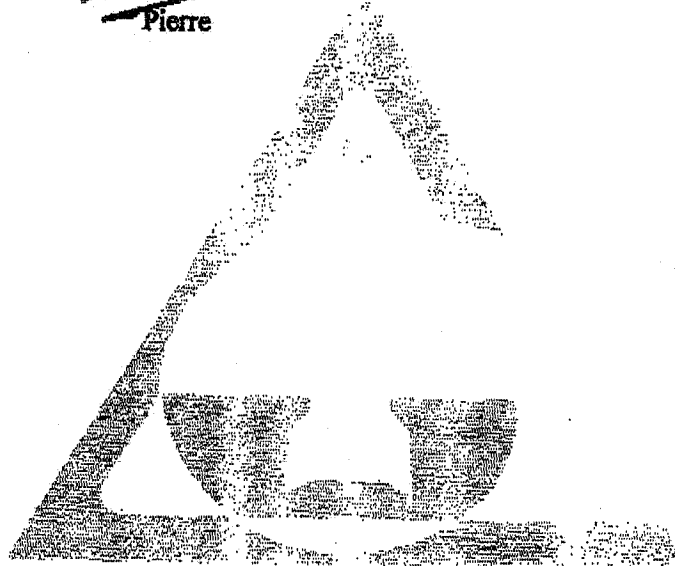
The CEFFIAC will be very happy receiving regularly a copy of the CW Convention Bulletin.

Moreover, if you are interested in, I could write some paper on training, for the next issue of the Bulletin.

Thank you for your help.

Best regards,

  
Pierre



*Hugh Jones*

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24 January, 1994

Dr. Mathew Meselson,  
Dept of Biochemistry & Molecular Biology,  
HARVARD UNIVERSITY,  
7 Divinity Avenue,  
CAMBRIDGE, MA 02138

FAX: 1 - 617 - 496 2444

Dear Mathew,

Thanks for the fax of 1.13.94 and backup letter with Michustina's 2nd list.

Concerning David - your abrupt dismissal of my arguments on his behalf leads me now to believe that you had not made a decision to not include him in the authorship of this paper to Nature but that you desire to exclude him. Not quite the same thing. While you invoke the four Russian pathology papers, I would point out that these had not been published when we left for Yekaterinburg. And if you had prior knowledge of them why did you include David in the party? Obviously, he was a key person in our investigations in Yekaterinburg.

I strongly recommend that you reconsider what you are doing. Your reasons are not sound. Once it is in print, any deed casts a long shadow. Any injustice eventually benefits the person injured and rebounds negatively on the person committing it, whether the injustice is real or only in perception. Similarly, magnanimity puts the doer of it in a good light. You have pulled off a coup and the time has come to put any personal disagreements behind you.

Thanks for your notes on the various individuals. In the interviewing of Danylov and Podgorbunski, did you ever discover how they acquired the lesions on his shoulder and the nape of her neck?

As to the LD50 for monkeys, I think you are practicing an economy of scientific detachment. I have spoken with Graham Pearson and he has promised material from his people to support the long held Forton conclusion that it is around 10,000 or more spores.

On 1.14.94 I also spoke with Col Russell Brown, Art Friedlander's deputy [Art was on holiday over the MLK holiday weekend]. The

USAMRIID position on LD50s is as follows:

Vollum strain & rhesus monkeys  $5.2 \times 10^4$  single spores

Ames strain & rhesus monkeys  $5.5 \times 10^4$  single spores  
but Bruce Ivins works on  $5.4 \times 10^4$  Ames strain spores

He quoted Friedlander et al, J Inf Dis (1993) 167:1239-42

The literature has the following aerosol doses:

[a] Druett, Henderson, Packman & Peacock, J. Hyg (1953) 51:359-371

single spore cloud & rhesus monkeys LD50 =  $4.5 \times 10^4$  with a total exposure of  $5.3 \times 10^4$

12 u particles & rhesus monkeys LD50 =  $6.4 \times 10^5$  with a total exposure of  $7.6 \times 10^5$

[b] Henderson, Peacock & Belton, J. Hyg (1956) 54:28-35 was based on an LD50 of  $5 \times 10^4$  single spores.

[c] Albrink & Godlow, Am J. Pathol (1959) 35:1055-1063 clearly indicate that for chimpanzees the LD50 is in excess of  $3.4 \times 10^4$  .. but

Lincoln et al (Fed Proc, 1967 26:1558-1562) are mistaken, unless there is further unpublished data, that Albrink & Goodlow's data demonstrate that the chimp LD50 is 50,000 spores. It may be this number but who knows?

[d] It is hard to interpret Young, Zelle & Lincoln [J Inf Dis (1946) 79:233-246] as it would appear to have been a rather crude aerosol with a "monkey" LD50 of  $20 \times 10^4$  ... the veterinary physiologist's rule of thumb is that the tidal volume is 5ml/lb body weight.

[Here they indicate an LRE 50 for sheep of 2, but Lincoln (1967) quotes a figure of 20 .... very confusing.]

All in all Jemski appears to have a lower LD50 by at least a factor of x10, and if he meant 2,500 spores for his 200 rhesus monkeys he differs by x20. One can ask whether he knew something the others didn't or more seriously whether his technique was the same. Carrier fluids can make all the difference in this work. Was it ever published, and if so where?

Secondly, with a probit slope of 0.7 your point might seem fair about adjusting the LD50 upwards making little difference ... maybe correct statistically but not in the implications being drawn from the results.

Thirdly, you are basing your conclusions not only on a low LD50 but on a (perfect) single spore cloud. I might not disagree with you if we used a single-spore equivalent source strength, but have you ever had experience of a single-spore cloud being released accidentally? Accidents are not that tidy or unique.

I view Barry Erlick's claim of an LD100 for 8000 spores with caution because of the nature of his audience and possible intentions of his presentation. I have heard authoritative statements that as few as 80 spores of high virulence strains can kill with the right chemical additives. But that does not tempt me to use such low numbers.

Best wishes.

Yours sincerely,



Martin Hugh-Jones

cc: AS

Hugh-Jones

PROFESSOR MATTHEW MESELSON

DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY

HARVARD UNIVERSITY  
7 Divinity Avenue  
Cambridge, Massachusetts 02138

Phone: (617) 495-2264  
Fax: (617) 496-2444

Date: 25 January, 1994 Pages including this sheet: 1

To: Martin Hugh-Jones: (504) 346-3331

Dear Martin,

Please read again paragraphs 3 and 5 of what I wrote to you on 20 December and tell me just where you differ. Do you think I have left anyone out who contributed a seminal idea or who contributed importantly to the organization, conduct, or analysis of the work reported in the present manuscript?

Although not directly relevant, I also believe that David accepts the same criteria regarding authorship, as indicated in my earlier letter. And let me stress again my high regard and appreciation for David's contribution to the pathoanatomical part of the overall study.

We do not know how our cutaneous cases became infected. The reported locations may be indicative of deposition followed by abrasion by clothing on the neck and shoulder. If we assume a deposition velocity of 0.1 cm/sec for the pathogen on the relevant surface, the deposition per square meter works out to be 6 times the number of spores inhaled by a person breathing 10 liters/min.

Tomorrow I will see Jemski and others at Edgewood and look forward to a discussion of dose-response. For one thing, I will try to learn more about possible errors arising from the methodology of dose measurement. Doses in the work reported by Glassman refer to aerosol that had first been passed through an impinger to remove particles larger than 5 micra. The intent was to measure only inhalable spores. It is of course inhalable spores that are meant in my calculations. I have clarified this point in the MS. Let's wait to consider these questions further until after my discussions at Edgewood.

A request: When it is convenient, would you let me have color prints of the grave markers of Sannikov and Romanov? Incidentally, is it correct that neither of us has a photo of the marker of Andrei Pavlovich Poleshaev?

Incidentally, my previous letter should have referred to 11 survivors, not 10.

Sincerely,

*Matthew*  
Matthew

cc Alexis

**THE HENRY L. STIMSON CENTER**

Pragmatic steps toward ideal objectives

Krepon 7  
1/1

January 26, 1994

Dr. Matthew Meselson  
Harvard University  
Dept of Biochemistry and Molecular Biophysics  
7 Divinity Avenue  
Cambridge, MA 02138

Dear Dr. Meselson

*Matt*

If you haven't done so already, please mark your calendar with a reminder to come to the Stimson Center at noon on Friday, February 4th for a working lunch/brainstorming session on the upcoming ratification debate of the Chemical Weapons Convention. To help with this effort, we have invited NGOs that are interested in CWC issues, as well as a few key officials from the Clinton Administration who are heading up the Executive Branch's ratification efforts.

The purpose of this meeting is to share information about upcoming activities and programming around the CWC's ratification. We might be able to identify programming gaps and identify useful initiatives. The Stimson Center has no intention to orchestrate or control any programming that you or your organization may be planning; our plate is full. We hope to finish our business by 2:00pm.

With your permission, I will chair the meeting. The Stimson Center will provide the sandwiches and sweets. We ask that you provide program overviews and ideas for facilitating a well-informed Congressional debate on the CWC. Please RSVP to Keir Lieber in this office if you have not already done so.

Best wishes,

*Michael*  
Michael Krepon

Hugh-Jones

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27 January, 1994

Dr. Mathew Meselson,  
Dept of Biochemistry & Molecular Biology  
Harvard University  
7 Divinity Ave.  
CAMBRIDGE, MA 02138

Fax: 1 - 617 - 496 2444

Dear Mathew,

Thanks for Tuesday's fax. Points in reverse order of priority:

Photos: Sannikov & Romanov ... 4"x6" O'K? Give me a few days. I have no photographs of AP Poleshaev.

Jemski chat: I look forward to hearing what he says.

Skin Lesions: In the words of "The King & I" it is a puzzlement. When the interviews were conducted, were either asked if they had had contact with dead or butchered animals during the epidemic? The shoulder is quite a large area. Where exactly was the shoulder lesion on Danilov? Can you draw a diagram?

David: I have reread paras 3 & 5 of your 20th Dec fax as per your first sentence. You ask me to tell you where we differ. Please refer to my previous two faxes to you on this matter. Those points should not have to be repeated. You refer to "an important contribution" ... importance is a subjective word. We have had to accept your decision on the "importance" and seminality of Alex Langmuire's and Popova's contributions. It is not always obvious from the present script. Besides yourself only Jeanne is party to their full participation. David, in my opinion, has played a very significant part in the 1992 field investigations and since; latterly in helping us sort out who can be excluded. His contribution is not and was not limited to the pathology.

I do not know what grounds you have for your statement about David's agreement. I do know from Alexis and Olga, who had spoken separately with David on this matter, that he was not pleased at being excluded. I had delayed discussing this with David as I had hoped you would do the right thing without appearing to be prompted. Yesterday he confirmed what I had been told and stated that he wanted to be included in the multiple authorship.

cc:AS

Martin 

Hugh - Jones

PROFESSOR MATTHEW MESELSON  
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Cambridge, Massachusetts 02138

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Date: 31 January, 1994 Pages including this sheet: 1

To: Martin Hugh-Jones: (504) 346-3331

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Dear Martin,


Yes, 4"x6" color prints of the Romanov and Sannikov grave markers would be much appreciated. Thanks.

Unfortunately, I have only the self-descriptions you already know regarding the locations of cutaneous anthrax lesions.

Regarding LD<sub>50</sub> values, I believe I am aware of all that is published. For now, let me just say that I am trying to make sense of the wide and interesting variations in the literature. As I wrote earlier, I intend to cite diverse values if they are well-based and can be referenced.

You mention the sorting out of which patients should be excluded on the basis of pathoanatomy. All of the pathoanatomical work which the present paper cites is either published and properly referenced or, in the case of five patients diagnosed as doubtful or negative for anthrax, cited as personal communications. Four of these are from the Abramova-Grinberg list of 96 sent by Lev from Ekaterinburg in December 1992. This warrants a reference to Lev and Abramova, but not co-authorship. The fifth, Spirina, is an emendation of the published diagnosis. I sent the MS to Lev, Jerry, and David and asked Jerry and David if their names should be added to the personal communication citations. Lev approved the citations and the rest of the MS, Jerry said not to trouble, and I have no answer from David. The important and excellent work of David, and of course Abramova and Grinberg, is already published and appropriately referenced in the present paper. But it would be counter to my understanding of the standards of scientific reporting to give the impression that this paper is their work.

Sincerely,



Matthew

cc: Alexis

*Hugh Jones*

DEPARTMENT OF EPIDEMIOLOGY & COMMUNITY HEALTH,  
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2 February, 1994

Dr. Mathew Meselson,  
Dept of Biochemistry & Molecular Biology,  
HARVARD UNIVERSITY,  
7 Divinity Avenue,  
CAMBRIDGE, MA

FAX: 1 - 617 - 496 2444

Dear Mathew,

I have been cogitating over your comments about Galina & Andrei Poleshaev. They and the "other" Poleshaev ... Andrei Pavlovich Poleshaev whom we found buried in Cemetery #14 ... the confusions of the time and the failure to clean up hospital and clinic case lists after an epidemic will produce occasions like this. In fact I am amazed how accurate overall the 'H' lists are. In my experience, there is seldom such concordance.

The older Poleshaev is epidemiologically neither fish, fowl, nor good red herring. At this time there is the possibility he was a true anthrax case [the great majority in that cemetery area are so]. His placing suggests that he died on or around the 9th April, which puts him before the overt recognition of cause, but his inclusion in area #14 indicates that a doctor considered it likely that he had anthrax. Obviously his death generated enough interest for him to be so considered. That we can still read his gravestone would indicate that his family thought enough of him to spend the necessary funds and that he probably had family in Sverdlovsk at that time. His absence from Lev's "Other Dead Russians" list indicates that he probably didn't die in Hospital No.40 [his presumed date of death would exclude this anyway] but he may have missed autopsy altogether, many did even in normal times. If he is an anthrax case, he is probably one of the very early cases from the chaotic "viral pneumonia" series, like the other first cases missing from the Michustina lists that died on the 4th April and on immediately subsequent days.

Some questions: [a] What are Fedulov's names/initials? [b] Galina Poleshaeva's occupation? [c] Did you ask the Poleshaev's about their pig and what did they tell you?

Best wishes,

  
Martin Hugh-Jones

Kucewicz  
X

WILLIAM P. KUCEWICZ

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42 Eighth Street  
Apt. 1314  
Charlestown, MA 02129

Charlestown Navy Yard  
Phone: (617) 241-5998  
Fax: (617) 241-9633

February 2, 1994

Prof. Matthew Meselson  
Department of Biochemistry  
Harvard University  
Cambridge, MA 02137

Dear Matthew:

I write to tell you that a new job has brought me to Boston. I am Managing Editor of a new magazine for stockbrokers called *Investment Profiles*. It has a circulation of 100,000 and its focus is on financial products such as mutual funds. I am quite delighted. To be 40 and a managing editor--a journalist's dream.

I live and work in the Charlestown Navy Yard. The office is two block from my apartment, which overlooks the *USS Constitution* and has a sweeping view of the Boston skyline. It's very picturesque.

While following CBW from afar now, I found curious the Jan. 28th *New York Times* article on the arrest of a Russian scientist for writing about chemical warfare. I thought the Russians had changed. Perhaps not.

In any case, I would love to get together and see you again--as a friend not an adversary. Perhaps a cup of coffee or lunch? I look forward to hearing from you and hope this letter finds you well.

Best,  
Bill

**PETER HERBY**  
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Switzerland

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fax (41 22) 734 00 15 c/o QUNO

**FAX TRANSMISSION**  
Page 1 of 6

To: Dr. Matthew Meselson, Dept. of Molecular Biology, Harvard University

Date: 2 February 1994

**MESSAGE:**

Attached you will find two documents I have produced recently for the HSP-PTS project. Julian thought you might want to have the letter to national training courses for your meeting with someone from a funding agency on Friday. These are being mailed to 12 national training programs today. Also attached is a draft project description, eventually to be sent to prospective authors, which might also be useful in your meeting. Any suggestions for changes would be welcome.

I will be meeting Julian in Brighton Monday to take stock and plan for the next steps.

All the best.

P.S. Could you ask Barbara to 'phone or fax me to let me know if the check for December has been sent yet?



17 chemin des Colombières  
1290 Versoix  
Switzerland  
2 February 1994

[Name]  
[Training Program]  
[Address]  
[City]  
[Country]

Dear xxxxx,

As you may be aware, the Provisional Technical Secretariat (PTS) of the Preparatory Commission for the Organization for the Prohibition of Chemical Weapons has recently entered into an agreement with the Harvard Sussex Program on CBW Armament and Arms Limitation (HSP) to develop jointly a program of **information materials on implementation of the Chemical Weapons Convention.**

As Ian Kenyon, Executive Secretary of the PrepCom, explained in his 13 December report (PC-V/6) to member states the information materials produced by the joint PTS-HSP project 'may be used separately, and in appropriate combinations, to meet the needs of government officials and others in developing national policies regarding the Convention and programmes for its implementation'. These materials will eventually form an integrated **Guide to Implementation of the Chemical Weapons Convention.**

The Harvard Sussex Program expects to commission work on this project by an international team of outstanding governmental and academic experts on the CWC. The project will be run under the direction of HSP's Directors, Dr. Matthew Meselson at Harvard University and Julian Perry Robinson at the University of Sussex, and of the External Relations Department of the PTS. You are probably aware of the Harvard Sussex Program's highly regarded publication Chemical Weapons Convention Bulletin, which has chronicled the CWC negotiations and other developments in the CBW field since 1988.

The Harvard Sussex Program is aware that information materials produced under its joint project with the PTS may be similar in nature to materials developed for national training programs, such as the program with which you are associated, for future OPCW inspectors and others. In order to avoid duplication of our efforts we are writing to ask for information on the content of your national training program and on any written materials which you may have produced.

The Harvard Sussex Program would be grateful to receive, in as much detail as you are able to provide, the outline of courses offered under your national training program and any written materials on CWC implementation which have been produced for your courses. To illustrate the kinds of topics we are particularly interested in I have enclosed an indicative list of topics on which PTS-HSP information materials are planned.

Information you provide will help us to determine where new materials need to be developed and where authors of existing resources could be commissioned to adapt materials for use in this project. Your materials will not be copied, published or adapted without your express permission and/or that of the author.

We look forward to cooperating with you to ensure the availability of accurate, useful and timely educational materials which will help ensure effective implementation of the Chemical Weapons Convention at the earliest possible date. If you have any questions please feel free to 'phone me on (41 22) 779 13 22.

Sincerely,

Peter Herby  
HSP Project Manager

### Draft List of Topics

**Summary introduction to the CWC**

**History and nature of chemical weapons**

**Rights and responsibilities of States Parties**

**Guidelines for establishing/designating National Authorities**

**Guidelines for national implementing legislation**

**Guide to Institutions under the CWC**

**Benefits of the CWC to States Parties**

**The CWC and economic and technological development**

**Assistance available under the CWC**

**Demonstrating compliance with the CWC**

**Reporting requirements: industrial activities**

**Challenge Inspections**

**Preparations for receiving inspectors**

**The Convention from the perspective of industry**

**The CWC and military organizations**

**Confidentiality and the CWC**

**Safe destruction of chemical weapons**

**Reporting requirements: past chemical weapons activities**

**Purposes not prohibited under the Convention**

Draft 1

**International Information Project on  
Implementation of the Chemical Weapons Convention**

Project Description

With the signing of the Chemical Weapons Convention by 154 states since its opening for signature in Paris in January 1993 many have applauded the culmination of two decades of negotiations for chemical disarmament. Indeed, the Chemical Weapons Convention (CWC) is a signal achievement. It marks the first successful attempt to eliminate, under stringent international control, an entire category of weapons with enormous destructive capability. Unprecedented political support for the CWC is reflected in its ability to attract 154 signatory states in its first year of existence.

Yet the conclusion of the CWC, and the signatures attached to it, will count for nothing unless the Convention enters into force, requiring ratification by 65 states, and is effectively implemented over a period of many years. In addition, it will be essential that parliaments are prepared to pay the costs of implementation, both nationally and internationally. The processes of ratification and implementation will require understanding and sustained support for the Convention on the part of parliamentarians, public organizations and industry officials - many of whom have, as yet, little or no knowledge of the CWC.

The longer the treaty takes to enter into force, and the less able states are to implement their obligations as soon as it does so, the greater the likelihood of the treaty-regime faltering, and of confidence in it fading. If this occurs a likely cause will have been ignorance...a lack of awareness among the public and parliaments of what is at stake...a lack of clear comprehension in national bureaucracies of what exactly national obligations are a lack of appreciation on the part of industry of the wider benefits of the Convention which leads to inadequate provision of industry-related data without which the routine verification system of the treaty will collapse. These problems are particularly acute in the more than 100 signatory states which did not play an active role in the Geneva CWC negotiations.

Primary responsibility for ensuring the successful entry into force has been entrusted, as provided for in the Convention, to the Preparatory Commission for the Organization for the Prohibition of Chemical Weapons, consisting of signatory states. The Commission is assisted by its Provisional Technical Secretariat (PTS). The PTS will, by mid-1994, consist of a staff of some 120 which will increase to 365, including inspectors, by the time of entry into force. While the PTS has attracted an impressive staff of technical experts on the CWC and has made significant progress in elaborating technical guidelines for treaty implementation, its ability to carry out educational efforts on behalf of the CWC is severely constrained - by its limited resources, by the need to hire on a geographically balanced basis and by political sensitivities.

With the above concerns in mind the Harvard Sussex Program on CBW Armament and Arms Limitation (HSP) and the PTS agreed in November 1993 to collaborate on a joint **Information Project on Implementation of the Chemical Weapons Convention**. The HSP, with its broad international contacts in the research community, political circles and industry and strong record of publications on CBW issues, will bring to the project a team of internationally recognized authors on treaty-related issues as well as expertise in the

Draft 1

production and publication of information materials. The PTS will contribute authors whose expertise is directly related to treaty implementation guidelines being developed by the OPCW PrepCom and will ensure that all materials produced are accurate and up to date.

As Ian Kenyon, Executive Secretary of the PTS, announced in his 13 December report (PC-V/6) to member states the joint PTS-HSP information project will provide information materials which 'may be used separately, or in appropriate combinations, to meet the needs of government officials and others in developing national policies regarding the Convention and programmes for its implementation'.

Materials developed by the project will serve several purposes: (1) introduction to the CWC and the history of chemical warfare, (2) description of the rights and benefits to states provided by the Convention, and (3) action-oriented guidelines to implementation of the treaty. Regardless of the subject the project's information materials will aim to inform those with little previous knowledge of the Convention in clear, accessible language; and to synthesize and consolidate the vast and complex documentation contained in the CWC itself and in the PrepCom's guidelines. Action-oriented materials will be written in a 'user-friendly' style and from the perspective of the ministry official, National Authority staff or industrial manager with responsibilities for treaty implementation.

It is expected that authors will be commissioned in the second quarter of 1994, with initial materials becoming available by the third quarter. Under a special agreement with the PTS authors will be provided, through the HSP, with current PrepCom documentation on subjects relevant to their assigned topic.

It is intended that materials on individual topics will be produced when they become available, during late 1994 and early 1995. As a result the HSP and PTS will be able to distribute materials on a flexible basis to states parties, to target groups of industry officials, inspector trainees, parliamentarians and to public and academic bodies. Often selected packets of information materials will be compiled for participants in regional seminars on which the PTS, the HSP and member states have agreed to collaborate. While each piece will be designed to stand on its own it will reflect a common format. Eventually the full range of materials produced will be published as an integrated Guide to Implementation of the Chemical Weapons Convention. Consideration will be given to production of the 'Guide' in the form of CD ROM and to the preparation of audio-visual materials on some subjects.

The International Information Project will be run under the direction of HSP's Directors, Dr. Matthew Meselson of Harvard University (USA) and Julian Perry Robinson of the University of Sussex (UK), and of the External Relations Department of the PTS.

Further information is available from:

Peter Herby, HSP Project Manager, 17 chemin des Colombières, 1290 Versoix,  
Switzerland, ph. (41 22) 779 1322, fax (41 22) 734 0015

Julian Perry Robinson, HSP, SPRU, University of Sussex, Falmer, Brighton BN1 9RF,  
UK, ph. (44 273) 68 67 58, fax (44 273) 68 58 65

Anil Wadhwa, External Relations Division, PTS/OPCW, Laan van Meerdervoort 51A,  
2517 AE The Hague, Netherlands, ph. (31 70) 376 1700, fax 360 0944

PROFESSOR MATTHEW MESELSON  
DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY  
HARVARD UNIVERSITY  
7 Divinity Avenue  
Cambridge, Massachusetts 02138

Phone: (617) 495-2264  
Fax: (617) 496-2444

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Date: 3 February, 1994                      Pages including this sheet: 1

To: Martin Hugh-Jones: (504) 346-3331

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Dear Martin,

In answer to your queries of yesterday:

Fedulov is Valeri Vasilevich.

Galina Poleshaeva worked at the kindergarten at Selkorovskaya 100, very near her home.

I find no record of a pig belonging to the Pleshaevs. Where is it noted? Or could you be referring to the notation on a hospital list regarding a sick pig owned by Fedulov? Fedulov himself made no reference to any sick animals and responded in the negative when asked if any animals died.

Yes, I agree that Andrei Pavlovich Poleshaev, if the name is correct, although not on the administrative list or any autopsy or hospital list, could have died of anthrax even though some in the anthrax sector apparently did not. Am I correct that we have no photo of a Poleshaev grave marker? Sometimes a second marker appears in the background of a photo. I looked in the backgrounds of mine but didn't find him. Did you check the backgrounds of yours?

I'm working hard on dose-response reports and calculations in order to give a representative but brief summary of the situation in the MS. Also still working on the computer drawing of figures, a skill I am just learning.

Sincerely,

Matthew

Hugh-Jones

DEPARTMENT OF EPIDEMIOLOGY & COMMUNITY HEALTH,  
School of Veterinary Medicine,  
Louisiana State University,  
Baton Rouge, LA 70803, USA  
[Tel: (504) 346-3335]  
[FAX: (504) 346-3331/3295]  
[Email:mehj2020@bonnet.vetmed.lsu.edu]

3 February, 1994

Dr. Mathew Meselson,  
Dept of Biochemistry & Molecular Biology,  
HARVARD UNIVERSITY,  
7 Divinity Avenue,  
CAMBRIDGE, MA

FAX: 1 - 617 - 496 2444

Dear Mathew,

I would greatly appreciate some information. Before we all went to Russia in 1992 you acquired some 6-hourly meteorological data from some organisation in Colorado for Sverdlovsk during late March -early April, 1979. I need similar historical data for selected parts of Brasil. The climatology center here on campus cannot help, even with addresses.

Whom should I contact within which organisation in Colorado? I would appreciate an address &/or telephone/fax number so that I can get on with it. We are trying to analyse some historical, human schistosomiasis data in relation to climate and satellite imagery.

With thanks,

Best wishes,



Martin Hugh-Jones

Guhin

March 1, 1994

MAR 8 1994

**Professor Matthew Meselson**  
Department of Biochemistry and  
Molecular Biology  
Harvard University  
7 Divinity Avenue  
Cambridge, Massachusetts 02138

**Dear Matt:**

It was good talking with you, especially after so long. Georgia and I hope to see more of you in the future. We envy your getting away to the Caribbean and warm weather, and trust you are relaxed and refreshed. I will call shortly after you receive this.

Enclosed please find a copy of my CV. I appreciate your advice and help.

Best regards,



Michael A. Guhin  
U.S. Mission CSCE  
Obersteingasse 11/1  
1190 Vienna, Austria

Enclosure  
As stated

## **MICHAEL A. GUHIN**

Embassy Vienna CSCE  
O: (43-1) 36-31-52 H: (43-1) 310-6575

### **Experience**

#### **Senior ACDA Representative, Vienna (1989-Present)**

Senior adviser and member of the U.S. CFE and now CSCE delegation. Action and oversight responsibilities in the negotiation of the CFE Treaty (particularly the inspection and information exchange regimes) and subsequent related agreements, treaty implementation and compliance issues (CFE Joint Consultative Group), the Open Skies Consultative Commission, and the Forum for Security Cooperation (harmonization of existing regimes, non-proliferation, conventional arms transfer and other areas). Supervise four staff members. Grade: SES 06

#### **Counselor, Arms Control & Disarmament Agency (1983-1989)**

Principal policy and operations adviser and chief of staff to the Director. Emphasis on nuclear non-proliferation and other proliferation issues, strategic offense and defense issues, START, INF, and strategic defense; nuclear testing and chemical weapons. Managerial responsibility and oversight for the agency (250 staff, budgets \$20-25 million). Grade: SES 06

#### **Senior Staff Member For Global Issues (1981-1983) National Security Council**

Responsibility for coordinating interagency policy/program analyses, briefing the President, making recommendations to him through the National Security Adviser, and overseeing policy implementation in the areas of nuclear non-proliferation, nuclear agreements, and other technology control issues -- as well as for energy, oceans, science, environmental, polar, and refugee issues. Grade: SES 05.

#### **Director, Non-Proliferation & Nuclear Export Policy Office (1978-1981) Department of State**

Responsibility for developing actions and strategies dealing with sensitive proliferation problems (e.g., South Asia, the Middle East, and South Africa) and for heading and completing negotiations on peaceful nuclear cooperation agreements with several countries. Supervised seven staff members. Grade: SES 05.

#### **Assistant Director, Export-Import & International Safeguards (1976-1978) Nuclear Regulatory Commission**

Responsibility for organizing and managing the NRC's then new statutory requirements for nuclear exports and related security and safeguards issues and for advising the Commission on all non-proliferation matters. Supervised ten staff members. Grade: GS 16

**Council on Foreign Relations International Affairs Fellow (1975)**

In conjunction with a research fellowship at the Washington Center for Foreign Policy Research (SAIS) and the American Enterprise Institute. Published papers on nuclear proliferation problems and U.S. foreign policy.

**Staff Member, National Security Council (1969-1975)**

Responsibility for coordinating interagency policy/program analyses, briefing the President, making recommendations to him through the National Security Adviser, and overseeing policy implementation in the areas of nuclear non-proliferation, nuclear cooperation agreements, technology control, nuclear testing policy and negotiations, multilateral arms control (particularly chemical and biological weapons), space and other issues. Supervised one staff member. Grade: GS 15.

**Awards**

Presidential Rank Award, Meritorious Executive (1985)  
Distinguished Honor Award, ACDA (1987)

**Education**

**Ph.D.** International Politics, London School of Economics and Political Science 1967  
**M.A.** Political Science, University of Southern California, 1964  
**B.A.** Political Science, University of Southern California, 1962 (*summa cum laude*, first in class and Phi Beta Kappa)

**Publications**

*John Foster Dulles: A Statesman and His Times*, Columbia University Press, 1972

*Nuclear Paradox: Security Risks of the Peaceful Atom*, AEI Policy Study, 1976

"The Domestic Political Context of American Foreign Policy 1974: The Executive, Congress and Consensus," in *The International Yearbook of Foreign Policy Analysis 1974*, edited by Peter Jones, Croom Helm London/Crane, Russak New York, 1975

"Dulles' Thoughts on International Politics: Myth and Reality," *Orbis*, Fall 1969

"The United States and the Chinese People's Republic: The Non-Recognition Policy Reviewed," *International Affairs*, January 1969

Fedorov

# СОЮЗ ЗА ХИМИЧЕСКУЮ БЕЗОПАСНОСТЬ UNION FOR CHEMICAL SAFETY

117292 РОССИЯ, Москва, ул. Профсоюзная, 8-2-83. Тел. 129-05-96  
117292 RUSSIA, Moscow, Profsojuznaya str., 8-2-83. Phone 129-05-96

March 28, 1994

Dear Dr. Mathew Meselson,

Dr. Constance Pechuaa (Institute of Medicine, Washington DC) suggested that I direct my difficult questions specifically to you. As you may know, in the Russian City of Cheboksari (Chuvash Republic/ Volga River Basin), from 1973- 1987 we produced the chemical warfare agent VX. Currently, everyone is involved with the examination of processes for destruction of chemical weapons- a universally welcome development. At the same time, the people of Russia who worked in the production of these poisons have been forgotten. This population consists of some 2,500-3,000 people who worked in the production of VX and are very ill as a result of their work.

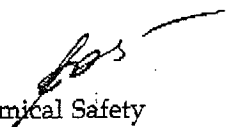
VX was produced in Russia at a civilian facility. At the same time, data regarding possible ways of dealing with the consequences of VX exposure are thus far only available to the military and thus secret. As a result, not a single civilian doctor is available to examine those suffering from VX exposure, let alone to try to cure them. Meanwhile, all these people, whose ages range from 40-60, are not expected to long survive, with some of them likely to end their lives in psychiatric hospitals.

As you can see, in Russia we have a population exposed to micro doses of nerve agents, but no corresponding population of doctors able to give these chronically and deathly ill people either examination or consultation or help. It is because of this that we turn to the doctors of America.

We sincerely hope that among your contacts in the U.S. medical community, you may know those who may provide us with their specific, professional help in this matter. As you appreciate, my current request is of a strictly problematic nature at this point. Only in the event that you can help me to locate professionally qualified doctors, will I be able to contact Foundations regarding support and compensation of these doctors and their work in our behalf.

If you can be of specific help to us in this critical matter, please contact me prior to 4/17/94 through the offices of Craig Williams (Chemical Weapons Working Group, fax 606-986-2695) or Gail Colby (Fax 609-497-1970). After 4/18 I will be back in Russia and can be contacted there at the coordinates provided.

Sincerely Yours,

  
Fedorov Lev A.,  
President Union on Chemical Safety

Prof. MATTHEW MESESON

Department of Biochemistry and Molecular  
Biology Harvard University.  
7 Divinity Avenue, Cambridge,  
Massachusetts, USA, 02138  
Fax: 617 495 8308 Tel. 495-22-64  
495-50-99

Dear professor,  
the Russian text of  
my monography is  
ready. I can begin  
the translation  
of monography in  
English. The mi-  
nimal cost of  
the translation is  
1500 dollars.

I believe that  
the translation is  
undesirable until  
I and YOU will  
have the understand-  
ing with publisher.

I sent fax Perry Ro-  
binson 21.2.1994  
but I have not  
reply.

I expect your  
advice.

### Content of monography

- Introduction . . . . . 6 p.p.
- I. From heavy development to stagnation  
(mighty weapon; creation of military  
chemical establishment, including  
Shihany; stages of development;  
post-war development; bloodless  
wars; level of achievement) . . . 55 p.p.
- II. Chemical agents (general characte-  
ristics; toxicology; effects of military  
uses; psycho-emotional effects;  
delivery systems; analogies of  
sarin and VX; formulations) 59 p.p.
- III Threat agents (carbamates, poly-  
cyclanes, dioxin, bioregulators,  
toxines, mycotoxines) 60 p.p.
- IV Prognosis of development 14 p.p.
- V Incapacitating agents (irritants,  
physicantes, including analgetics,  
tremorgenes and emetics.  
appraisal of incapacitants) 31 p.p.
- Selected bibliography.
- Index.

Volume of monography is 10  
signatures, including 6  
pictures and 15 tables.

Sincerely yours  
*Nikolai Antonov*  
Nikolai Antonov

Address: Russia  
Moscow  
telephone  
(095) 498 54 37  
fax: 246 20 20  
905 70 30

Jemski

DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY  
HARVARD UNIVERSITY



7 Divinity Avenue  
Cambridge, Massachusetts 02138

8 April 1994

Dr. Joseph V. Jemski  
7922 Long Meadow Drive  
Frederick, MD 21701-3267

Dear Joe:

Here is a little table listing some of the variables in experiments by you and others on inhalation anthrax in monkeys.

I would be grateful if you would check the accuracy of the entries for your own work and add any further information as you see fit.

If you see Bruce Ivins or Louise Pitt, would you ask them to do the same for their experiments?

I enclose a few copies with the request that you send one back to me after marking it up.

Here, too, is a copy of the final, final, final text, the one now at NATURE. As I mentioned on the phone, they accepted it.

With best wishes,

Sincerely,

A handwritten signature in cursive script that reads 'Matthew Meselson'.

Matthew Meselson

*Miller*



DEPARTMENT OF NUCLEAR ENGINEERING  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

77 Massachusetts Avenue

Cambridge, Massachusetts 02139-4307

Room: 24-102

VERIFICATION:

FAX NO.:

(617) 253-3801  
617-258-7437

FACSIMILE REQUEST

DATE: April 11, 1994

ACCT #: 24612

TO: Prof. M. Meselson

FROM: Dr. Marvin Miller

ORGANIZATION: Harvard University

DEPT.: Nuclear Engineering

NUMBER OF PAGES (INCLUDING COVER PAGE): 3

FAX #: 496-2444

VERIFICATION #: \_\_\_\_\_



DEPARTMENT OF NUCLEAR ENGINEERING  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

77 Massachusetts Avenue

Cambridge, Massachusetts 02139-4307

Room:

(617) 25

To: Matt Meselson, Harvard University

From: Marvin Miller. MIT

Re: Possible (hopefully) possible synergism between verification of the CWC and the proposed global convention to ban further production of fissile materials for nuclear weapons

Date: April 11, 1994

Dear Matt:

I enjoyed our conversation about the above as well as other matters, and hope we can do it again in the near future. Re other matters, an article by Edward B. Atkeson, entitled "The Middle East: A Dynamic Military Net Assessment for the 1990s (The Washington Quarterly, Spring 1993, pp. 115-133) contains the following, based on conversations in Israel with military planners:

"Secret, high-technology weapons, the planners believe, will be the key to "befuddlement" of the enemy. These are described as having the "ability to unhinge an enemy offensive at the very outset, within the very first few hours of engagement, and thereby completely upset its original plan." The identity of such a weapon, or weapons, is a matter of some speculation. Whatever form the weapons may take, the achievement of a "befuddling" capability during the three-six-year window of quiescence is considered essential, regardless of cost."

While I don't know whether the above includes chemical agents, and thus is relevant to the concerns which you expressed in the March CWC Bulletin, it reminds me, in spirit, of the proposals which have been advanced by some US weaponeers and others to develop new species of nuclear weapons which eliminate bad people like Saddam Hussein in their underground bunkers with "minimal collateral damage".

Re the advertised subject of this memo, let me remind you that the aim of the fissile material cut-off convention (FMCC) which is being pushed by the Clinton administration is to derive some nuclear non-proliferation benefit from the fact that we and the Russians no longer have any need for more weapons materials. (In fact, the major headache now is to find a safe and secure way to dispose of the material, particularly the plutonium, from dismantled warheads.) Thus, the US government has proposed that both the de jure and the de facto nuclear weapons states stop

producing unsafeguarded plutonium and highly-enriched uranium. The major problem many people have with the convention is that it is silent on the issue of existing stockpiles of weapons materials and/or actual weapons, and thus tends to legitimate their possession by the defacto weapons states (India, Pakistan, and Israel). Supporters of the convention, including me, concede this, but argue that constraining the nuclear programs of the de facto states is very important, even if they retain a weapons capability for some time to come. However, all agree that credible verification of non-production is essential, and here, I think we may have something to learn from the challenge inspection protocols in the CWC. In particular, since it is legitimate under the FMCC for both the de jure and the defacto weapons states to retain both existing stockpiles of fissile materials and tritium as well as the capability to continue to produce the latter, sites where the relevant facilities and stores exist are legitimate candidates for managed access in the manner of the CWC. More generally, since, optimistically, both the CWC and the FMCC will be in force simultaneously in many countries, one needs to think about the relationship between the inspections regimes. That is, challenge inspections under the CWC may turn up nuclear activities which may or not not be prohibited under the FMCC, and vice versa.

At the moment, I am working on the problems involved in persuading the defacto weapons states, particularly Israel, to agree to the FMCC. As I mentioned, Abdullah Toukan doesn't believe that this will be a sufficient quid pro quo to gain acceptance of the CWC by Egypt, Syria and Jordan; he wants Israel to sign the NPT, and delay its implementation for five years or so. While I sympathize with his dissatisfaction with a FMCC as only half a loaf, to my mind it would be a significant half, and there is no possibility of getting Israel to sign the NPT in the near term. Thus, I would like to continue to work on the FMCC, explore the possible synergisms with the CWC with regard to verification, and in the process, maintain a dialogue with Toukan.

It would be nice to do something jointly on this. I could get a reaction from people in the State Department during a trip I have scheduled to Washington next week, but would rather wait until we had a chance to talk again and see if we can come up with a concrete idea. Let me know what you think. Also Tom Wander of the AAAS told me that he had invited you to a meeting in Portugal on June 9-12, 1994 which will discuss future threats to security in the Middle East. I will be giving a paper on weapons of mass destruction in the region; your commentary would be very helpful, and I hope you can come.

Regards,

*Marvin Miller*

Marvin Miller

Arthur Friedlander

DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY  
HARVARD UNIVERSITY



7 Divinity Avenue  
Cambridge, Massachusetts 02138

12 April 1994

Arthur M. Friedlander, M.D.  
Chief Bacteriology Division *Bldg 1425*  
USAMRIID  
Frederick, MD 21702

Dear Art:

Here is a table listing some of the parameters that may have affected the dose-response results that we discussed when I visited Fort Detrick at the end of February. Would you please give copies to Louise Pitt and Bruce Ivins? The fact that the collection fluid used by Jemski contained gelatin and also the fact his result for guinea pigs agrees with those of Druett indicate that neither the collection fluid nor any other aspect of the assay procedure accounts for the difference in LD50.

Underneath the tabulated parameters, I have listed some of the obvious variables that can affect experimental results. Is it possible that, in monkeys but not in guinea pigs, single spores are less infectious than spores in somewhat larger particles?

I trust you received the English translation of the article by El'kina. I look forward to receiving from you translations of the three Abramova-Grinberg articles.

Sincerely yours,

Matthew Meselson

Hugh-Jones

DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY  
HARVARD UNIVERSITY



7 Divinity Avenue  
Cambridge, Massachusetts 02138

13 April 1994

Dr. Martin Hugh-Jones  
Dept. of Epidemiology  
and Community Health  
School of Veterinary Medicine  
Louisiana State University  
South Stadium Road  
Baton Rouge, LA 70803-8404

Dear Martin:

Here is a copy of the manuscript we sent to NATURE a few days ago. John Maddox told me he would accept the article and I expect to see him in London next week and to discuss any editorial changes he might request.

Here too is a letter of related interest from Clyde Replogle, who has been modelling our data. I believe he obtained it via Dave Huxsoll. I am glad to see that his modelling results are in line with mine. Replogle, Medema and some people from JAYCOR spent this morning with Jeanne and me going over various aspects of the epidemic. Despite an interesting and enjoyable discussion, we did not come up with anything of much importance that is new.

Regarding dose-response, I enclose a table that summarizes some of the parameters and variables relevant to three groups of experiments with monkeys. Some of the information comes from discussions with Jemski, Pitt and Ivins.

Sincerely,

*Matthew*

Matthew Meselson

Jansen



HARVARD SUSSEX PROGRAM  
ON CBW ARMAMENT AND ARMS LIMITATION

Co-directors:

Matthew Meselson  
Dept. of Biochemistry  
7 Divinity Avenue  
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USA

Tel: (617) 495-2264  
FAX: (617) ~~495-8308~~  
496-2444

Julian Robinson  
SPRU  
University of Sussex  
Brighton, BN1 9RF  
England  
Tel: (0273) 678177  
FAX: (0273) 685865

15 April 1994

Colonel Karen Jansen  
507 North Columbus Street  
Alexandria, VA 22314

Dear Colonel Jansen,

Julian Robinson and I are delighted at the prospect of publishing an article by you on the UNSCOM experience in the Chemical Weapons Convention Bulletin. I was immensely impressed with your presentation on the subject in Washington last month and am eager to make it available to the readers of the Bulletin. For your interest I enclose our last two issues.

Advisory Board:

Will D. Carpenter  
Jonathan Dean  
Charles Flowerree (deceased)  
Shirley Freeman  
James Leonard  
A.J.J. Ooms  
Abdullah Toukan

We would like to receive copy the middle of May so that we might discuss any editorial matters arising before your departure for Korea at the end of the month. As for length, anything between 2,000 and approximately 5,000 words would be fine.

On another subject, here is a manuscript on the epidemiology of the Sverdlovsk anthrax outbreak of 1979 that will appear in Nature, probably in the early summer. I had no recent access to classified material on the subject, and so was glad to receive the enclosed comments of someone who has.

Sincerely yours,

Matthew Meselson

cc: Julian Robinson