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24 January, 1994

Dr. Mathew Meselson,
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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 arguements 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 Porton 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 5.2×10^4 single spores

Ames strain & rhesus monkeys 5.5×10^4 single spores
but Bruce Ivins works on 5.4×10^4 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 = 4.5×10^4 with a total exposure of 5.3×10^4

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

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

[c] Albrink & Godlow, Am J. Pathol (1959) 35:1055-1063 clearly indicate that for chippanzees the LD50 is in excess of 3.4×10^4 .. 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 20×10^4 ... 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