

Larson

5821 BUTTERFLY LANE
FREDERICK, MD 21703

28 November 2001

Dr. Matthew Meselson
Dept. of Molecular and Cellular Biology
Harvard University
Cambridge, MA 02138

Dear Dr. Meselson:

The current anthrax episodes have caused me to recall some of the aerosol work we did with B. anthracis at Ft. Detrick. Joe Jemski has provided me with a copy of your paper on "The Sverdlovsk Anthrax Outbreak of 1979" in Science, 18 November 1994, with your "Note Regarding Source Strength" that applied to Sverdlovsk.

Both Dr. Jemski and I have wondered about your last sentence in the next to last paragraph of the Science article which reads, "If these divergent estimates bracket the actual value, the weight (39) of spores released as aerosol could have been as little as a few milligrams or as much as nearly a gram".

In your note you say that "the number of spores per milligram is taken as 10 exp.10" where you again cite a paper (39) by Scherrer and Shull in the Canadian Journal of Microbiology. I have a great deal of difficulty understanding your estimate of spore concentration per milligram and hence your estimates of total spore weights released in the Sverdlovsk incident. My arithmetic tells me if one had pure spores of unit density and 1 micrometer diameter one could get no more than 10 exp. 9 of spores in a milligram. Your reference 39 at Table 1, shows an apparent spore volume of 0.48 cubic micrometers for B. cereus and a density of 1.7gms./cc. That was the only information that I saw that might be related to concentration and that would seem to mitigate against even the figure of 10 exp. 9.

No. p given is 1.4 g/cm³ for dry unwashed spores in Table 1. The 1.7 is for washed.

And we now know that the spores released in the Sverdlovsk incident were from "production" runs, don't we? And production product would likely carry with it a good bit of impurities, largely dried culture medium and nonviable spores, so that 10 exp.10 may be expected to weigh 1 gram. This all makes me wonder if your paper should have read, ".....as little as a few grams or as much as nearly a kilogram".

Both Dr. Jemski and I would be pleased to hear from you on this matter. I have an e-mail address that is budlarson@juno.com if you find that convenient to use.

With Best Regards,

Bud

Edgar "Bud" Larson

val given = 0.48 μm³
1.4 x 0.48 = 0.67 x 10⁻¹² g
Table 1 in fact gives weight as 0.67 fg = 0.67 x 10⁻¹² g.