DNA1.940930.070

[redacted]

Lt. Col. H. H. Hold
Medical Division
Headquarters, DASA
Pentagon
Washington 25, D.C.

Dear Col. Hold:

I am writing in response to a call from Comm. McGraw, April [redacted] 1962, concerning the repeat of the experiment performed in Plumbob (TG-57). The delay in this response is occasioned by my leaving town shortly after McGraw called, and the difficulty of getting a committee together since my return for various reasons. Rather than delay this further, I have undertaken to summarize our thinking to date, together with some thinking of my own. I will convene the committee which is considering this work as soon as possible, and if there are significant deviations from the accompanying outline I will so inform you.

Very truly yours,

Robert H. Wilson
Assistant Professor
Radiation Biology

RHW:lg

Enclosure:

HRE-0769

BIOMEDICAL AND AEROSOL STUDIES FOR PROJECT 63

Basic Objectives:

Improved evaluation of acute deposition and/or retention
Investigation of concept of time to maximum lung burden
(see WT-1511, p. 49 and Fig. 4.5)
Further study of variation of air concentration with time,
particularly for early times post-release
Closer scrutiny of "wind-length" effect (WT-1511, pp. 42, 49, 53)
More defininitive characterization of aerosol
Characterization of particulates

Procedures:

Equivalent to Project 57, but with maximized exposure conditions
Zero to minimum wind shear at release
Release wind in same direction as predominant wind for period
following release
Neutral to mild inversion
Specialized physical release studies <u>only</u> if no liklihood of
reduction of dispersion
If possible, boost in alpha-content to enhance analysis

Release Array:

<u>Dependent on trajectory predictability</u>
Animals at 3 distances, bracketing predicted distances of maximum
air concentration
Samplers at each dog station
Gross air, particle-size, particulate characterization
centrally powered if possible
Acute animals at (nominally) 2000, 4000, 8000'
Remove 3 from each at H + 4 hours or less. Two from
each at 4, 8, 16, 32, 60, 90, 120 and 150 days post release
Hold all animals for 3 days to allow upper respiratory tract,
gastro-intestinal tract clearance (except those at H + 4)

Chronic Array:

Two isopleths (50-500 or 100-1000 $\mu gm/m^2$)
Twenty-eight dogs on each (25 for serial sacrifice, 3 reserve and/or
long-term holding
Serial sacrifice
Five from each group at 30, 60, 90, 120 and 150 days
Two for initial lung burden, three for sacrifice
30, 60, and 120 days post removal

Sampling

Gross samplers at all dog stations
Particle size samplers at all stations, but not necessarily routine
Particulate characterization samples non-routine

Placement:

Locate stations more quickly, even if only approximately right; determine actual ground concentration later
Develop power net which will permit rapid installation of samplers

Analysis of Samples:

Tissues
Perform in clean, meticulously controlled lab
Run numerous checks, spikes and dummies
Analyze lung, pulmonary lymph node, and bone samples, representative urine and fecal samples
Air samples
Should be possible to count directly with proper preparation of samples

Additional Considerations:

In general, non-biological or non-aerosol participation by others should be on non-interference basis
Particulate characterization will have to be performed by others
Tissue analyses will be particularly challenging problem; needs very careful planning and implementation
Intention is to examine smaller number of facets more carefully, hence smaller number of tissues, no initial planning for autoradiography
Allowance for URT, G-I clearance based on consideration that these burdens have no hazard significance, and in general are unrealisticly high in animals as compared to man
Support personnel will probably have to be military assignees, as in Project 57