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UCLA RB 71

October 6, 1948

26152

Dr. James A. Jensen  
Assistant Director of Medicine & Biology  
U. S. Atomic Energy Commission  
Washington, D. C.

Dear Dr. Jensen:

This will serve to review and confirm my understanding of the more significant impressions and conclusions reached at Socorro, New Mexico, October 1, 2, and 3. Dr. Harry Whipple's contribution was very helpful and much appreciated.

In order that the record may be straight and more complete we include a brief review of oral statements made in Washington at the invitation of Dr. Shields Warren during the week of September 13, 1948, and which, in part, prompted your visit at that time, and on the basis of nearly complete data accumulated this year on soil activity in about 400 square miles of the contaminated area together with data obtained by Jacobsen and Overstreet on plant uptake (Soil Sci. 65:129-134) and Dr. J. Hamilton on animal uptake (Plutonium Report) together with scattered and very meagre data of our own we emphasized certain facts and their possible implications. These statements were made not only to Dr. Shields Warren and yourself but also with his permission to others in Washington. These included: General McCormack, Mr. Shugg, Mr. Adrian Fisher, Mr. Edward Trapnell, Col. Preuss, Dr. George Lyons, Dr. Charles B. Spruit, General Nichols, Captain Wynant and several others whose names escape me.

Points emphasized were these:

1. Maximum activity in and near the crater area is about 2.7 mr/hour with considerable variability.
2. Maximum activity in scattered areas on the Chupadera mesa, some 20-30 miles to the north eastward, reached 2.7 mr/hour.
3. The average activity over the 400 square miles surveyed is considerably less. (A guesstimate hurriedly made since would indicate average activities less than 2.7 mr/hour by a factor of ten or thereabouts.)
4. There is no reason to think that any hazard from total body radiation exists anywhere in the area - unless someone should choose to spend about two days or more lying on the ground in the most active areas.
5. Hazards that may be presented to persons in the area during times when wind-blown dust is in the air, which is of frequent occurrence, is another matter, especially as regards alpha emitters. We mentioned data from the Chicago laboratories indicating that alpha aggregates as small as .1 micron, may, in time, induce lung tumors in mice. Further data are needed.

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6. There is evidence that certain plants will take certain elements from very low concentrations in the soil and concentrate them in high degree. For example, wheat and other plants in the Great Plains concentrate selenium by a large factor (Williams, Lakin and Byers, 1941, Tech. Bul. 758, USDA). We do not yet know whether plants in the contaminated area are picking up radio active materials or in what tissue or in what amounts. We do know that certain grasses, oats, juniper and others show low grade activity from occluded dust and probably metabolized material. The laboratory determinations of collected material is just getting under way.
7. About 5000 head of stock is grazing in the 400 square mile area, much of it in the Chupadera from the Coker and Harvey herds.
8. Radioactive cow dung is easy to find - 2.1 to 9.7 counts/sec./gram dry weight.
9. Public relations and legal liability matters present potentially serious problems. At least one person in Socorro known to us is actively wondering whether a uterine tumor (!) and a spleen condition may be due to radiation. She trucked gasoline to the Trinity area and had, until recently, a shoebox full of trinitite in her possession.
10. We discussed the possibility of using the Trinity area and Base Camp as a training ground for selected enlisted personnel and others.

\* During our conferences in Socorro last week, we presented, on the basis of such data as we had, our conclusion that the next jobs to be done to determine, with a minimum of time and expense, whether or not biological hazards still exist in the area:

1. The bioassay of the principal organs of livestock known to have grazed for two years or more in the active areas.
2. The culture of economically significant plants in contaminated soil (media) under laboratory, controlled conditions to study the uptake of long lived radio elements, their metabolism and transfer to animals.

It was pointed out that greenhouse, headhouse, growing plot and associated laboratory facilities will be required to determine whether or not any of the elements known to occur in the contaminated area are taken up in significant amounts by any crop or garden plant that can be grown in cultivated areas in which low grade activity now exists. This project should proceed at an early date, since we have other basis for estimating long range effects on man of continued use of food plan grown continuously on low activity soil. Similar arguments apply to such other radio active elements as may be used in any form of RT. Transfer to animals of materials taken up by or stored in plants will necessarily be checked on suitable laboratory animals including poultry. (Findings in the Hanford area indicate the storage of activity in the yolks of duck eggs.)

After extensive discussion it was agreed tentatively that:

1. Arrangements should be completed and funds provided for the purchase of about ten head of cattle, two, and if possible, three years old,

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known to have grazed predominantly in the more active parts of the Chupadera, as well as funds for special equipment. It was the consensus of opinion that the stock should be purchased, tagged, and held by Mr. Coker in the Chupadera until suitable arrangements could be made with a Los Angeles slaughter house to butcher and store the carcasses and internal organs; that certain bones, the GI tract, liver, spleen, kidneys, adrenals, pancreas, lungs should be quick frozen and held in "deep freeze" until wanted in the laboratory; that the carcasses should be held in cold storage until, on the basis of the selected parts, we can determine whether the carcasses might be released for human consumption or otherwise disposed of. Parts of the lungs should be examined for damage and for alpha activity.

Funds will be required for a large drying oven and a large muffle.

It was thought that when arrangements had been completed with a Los Angeles Packing House, the animals should be shipped by truck.

2. It was agreed that detailed plans should again be presented for undertaking as soon as possible, "The culture of economically significant plants in contaminated soil (including finely divided trinitite)" etc., and that you will give careful attention to ways and means for implementing these plans.
3. We discussed, also, the desirability of bringing in about 20 head of young stuff from outside the Socorro region and dividing them into two lots. One group to be maintained for several years in the most active available area on the Chupadera and the other group in a nearby uncontaminated area. (Mr. Coker, who is quite friendly and cooperative, owns both types of ground.) This experiment would conclude with the bioassay of selected parts. It was agreed that this project and associated modifications of it should await the outcome of the bioassay mentioned on a previous page.
4. There was discussion of a suitable mobile laboratory suitable for work of the type we are doing, to accompany a training group and for use under war conditions. Our ideas of such a facility will be presented in due course.
5. It was generally agreed that because of the fact that the bioassay of stock from the Chupadera offered the best available means for getting good information promptly on whether or not a biological hazard now exists in the area and that the greenhouse-laboratory work on plants should proceed at once as an independent enterprise to estimate the probability of long range hazards, as well as to furnish information on the metabolic history of other types of radioactive materials.

Finally, we discussed the feasibility of preparing a release for the Socorro paper to give the local population some idea of the dangers of getting too familiar with the greenglass and beads. We understand that you will discuss this matter with the proper authorities in the Commission. You will recall that inhabitants of Socorro are to be talking about these materials as souvenirs,

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especially when worked into jewelry. The release might well be flavored with a discussion of nuclear energy and applications in biology, medicine, and industry.

\* Personally, I think it would be a good investment in good will for someone to speak in that area, showing one or more of the moving pictures that are available to general audiences. These people have a special interest in the matter and doubtless would appreciate a little special attention. Such a talk, no doubt, would be given space in the local press both before and after the event and would furnish the occasion for including such special information as may be agreed upon by the authorities. Some of the same material might well be woven into the talk and the essential points driven home both by the spoken and written word.

Sincerely yours,

*Albert W. Bellamy*

Albert W. Bellamy  
Chief, Alamogordo Section

AWB:dw

CC: F. McLean, M.D.  
C. Tyler  
Shields Warren, M.D.

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