

REPOSITORY Oak Ridge Operations ~~SECRET~~
COLLECTION Records Holding Task Group
Class. Doc. 1944-94
BOX No. RHTG # 161 Bldg. 2714-H Vault
FOLDER RHTG Doc. # 82,550

THIS DOCUMENT CONSISTS OF 2 PAGE(S)
NO. 1 CR 800 69 45 AM
E 1018
6 April 1945
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Lt. Colonel H. Friedell
P. O. Box E
Oak Ridge, Tennessee

RHTG # 82,550²
BOX #
CLASSIFIED FILE
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Dear Col. Friedell:

Although we sent you directions for the 49 experiment along with the material we feel that we should write you more detail.

The vial that you will receive contains about 5 mg of plus 49 nitrate. The solution is 2N with HNO₃ and contains 10.3 mg of 49 per ml. When 50 lambda of this solution is diluted to 25 ml with a sterile solution containing 0.3% sodium citrate 5H₂O (i.e. 0.3 g per 100 ml of solution) and 0.5% sodium chloride, it will give a solution of the plus 49 citrate complex which will have a pH of about 6 and will contain 20.6 gamma of 49 per ml. If 0.25 ml of this solution is injected with a Tuberculin syringe it will be a dosage of 5.1 gamma.

The point about which I am most concerned is the calibration of the Tuberculin syringe in order that we will know actually how much 49 the subject did get from the injection. My experience has been that a syringe always delivers 5-10% less than indicated by the graduations. There is also the problem of 49 adsorption by ground glass surfaces. It seems to me the best way to overcome these difficulties is to calibrate the syringe against the 49 solution itself.

This is how I would like to see it done.
Fill the syringe with the solution to be injected and let it stand for 5-10 minutes, after which, discard the solution in the syringe. This supposedly would partially saturate the ground glass walls with adsorbed ions. Next fill the syringe to the 0.50 ml mark and inject immediately 0.25 ml of the solution. Take the syringe and solution back to the laboratory and have the same individual who read the syringe during the injection, discharge 0.25 ml of the solution into each of five 25 ml volumetric flasks containing 4-6 N HNO₃. Each time, the individual should fill the syringe and take the volume between 0.50 and 0.25 ml on the syringe scale. These flasks should then be diluted to volume with 4-6 N HNO₃ and assayed for gamma activity. Assuming 71,000 counts per minute per gamma, one should take 100 lambda of each of these solutions and plate directly and get 1420 counts per minute, if the dosage was the expected 5 gamma. Obviously, this will not be the case due to the inaccuracies occurring, but an average of the five assay measurements should be a good indication of the amount injected into the patient.

Another very important point to us is the record, collecting, packing and shipping of samples. I specified in the other directions that

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MALCOLM THRESEN, ANALYSIS
Name (ADD) - Organization
7-29-94
Date

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RB Burchett Analysis
Name (ADC) - Organization
7/27/94

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6 April 1945

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each voiding of urine and each stool be bottled separately during the first 36 hours. You may wish to avoid this as a matter of convenience in collecting but the reason for my request is obvious. I would like to get as many determinations as possible during the peak of the excretion curve occurring immediately after the injection. If you think it better, we could take 8 or 12 hour samples for the first 5 or 6 days after which we could drop to a 24 hour sampling schedule. Regardless of which sampling schedule you think best be sure and see that all urine is collected and that each sample bottle is carefully marked with the time interval it represents and with the times elapsing between injection and the beginning of the collection period. As for the feces, we would like to have that collected on a similar schedule. In case it is necessary to give the patient an enema it will probably be necessary to discard the sample. I am sure we can get a feces excretion curve without having every sample, provided we have an accurate record of how long after injection the stool was passed.

Perhaps the best bottles or containers in which to collect and ship the samples would be Mason Fruit Jars with glass or porcelain insert tops and fruit jar rubbers to make sure of a tight seal. You may have a better idea on this. Urine samples should be preserved with 1-5 ml of formaldehyde. Enough formaldehyde should be added to the feces to cover it. All samples should be shipped as soon after collecting as possible. The samples should be packed about twice as securely as normally necessary because the packages coming into this place are hardly recognizable after the truckers get through with them. In selecting bottles or containers for samples use new ones instead of those coming from other parts of the project. The thing that is most important to us is that all possibility of alpha contamination be eliminated as we may be interpreting counts as low as two or three per minute. After the injection and assayings are complete, please return both the stock solution and the remainder of your injecting solution to this site and I will have both re-assayed as a check.

Please call me if you would like to have more detail on any phase of the experiment.

Sincerely yours,

Wright Langham
Wright Langham

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