AIR1.941130.028c

1. Title: Potassium Level in Normal Human Subjects

2. Project/Task/Work Unit: 775701

3. Principle Investigator: Robert E. Tatsch/RAH/3416

4. Associate Investigator: Robert C. Nelson, Capt, USAF, BSC

5. Medical Consultant: Hugh B. Mitchell, Col, USAF, MC

6. Purpose: The purpose of this study is to determine the total body potassium and lean body mass of human subjects. The subjects are to be drawn from the general population.

7. Background: Since March 1971, approximately 900 individuals have been counted in the SAM Whole Body Counter. These individuals consist primarily of flying personnel and have been referred to SAM by other medical facilities for a suspected illness and/or their ability to continue on flying status. Comparison of total body water tests utilizing tritiated water and whole body counting indicate good agreement between the two methods in arriving at percent fat. Since these individuals form a very select group, data is required from the general populace for comparison of individuals suspected of being ill and those considered normal. The information gathered will be used to group the populace according to age and weight against an average potassium content of each group. This would be invaluable in determining the radioisotope body burdens of individuals who may have been exposed to internal radiations. In addition, the data gathered may be of value to those physicians responsible for determining obesity of individuals.

8. Hazards: Because of the simplicity of taking a whole body count, no hazard to the individual exists. Simply stated, the procedure requires the individual to change into hospital greens, lie in a sling, and be counted for a period of five minutes. Some individuals are apprehensive about being placed in the counting chamber because of claustrophobia. These individuals are encouraged to continue with the count, although no individual is forced to be counted against their will. The individual is provided a switch which when activated will start the withdrawal of the sling from the counting chamber.

9. Requirements for Human Volunteers:

a. It is anticipated that approximately 1000 personnel both male and female will be required in order to obtain enough personnel in each age group for good statistical results. It is anticipated that supervisors will cooperate and allow permanent party personnel assigned to Brooks AFB, Texas to volunteer as subjects for the study.

b. The total testing time and forms to be completed should not require a person to be absent from his duty station for more than 1/2 hour.

c. The subjects to be counted will be required to complete SAM Form 249, Health Physics Data Sheet, and a Medical History form. After completion of these forms, the subject will be required to change into hospital type greens and then counted for a period of five minutes, after which the subject will be released.

d. No special physical requirements exist for the subject, since it is desired to obtain a normal cross section of the general population.

10. Experimental Method: With the cooperation of the Commanders and respective division chiefs, volunteers to be counted will be solicited from personnel assigned to Brooks AFB. The subject will change into hospital greens and enter the counting chamber. The subject will be counted for a period of five minutes and the count recorded for Cesium and Potassium. A background count, i.e. without a subject, will be taken before and after the subject is counted. The data is then analyzed utilizing the SAM computer. The computer print-out consists of the individual's name, SSAN, age, date of count, weight, Gms potassium, lean body mass, percent fat, and his ideal weight. This data will then be statistically evaluated to determine whether a weight, age and Gms potassium relationship exists.

11. Since no hazard to personnel exists, they will only be requested to sign the Health Physics Data Sheet, copy attached, stating that they will have a whole body count and that the data can be used for scientific purposes.

12. References:

(1) Allen, T. H., et al, Total Body Potassium and Gross Body Composition in Relation to Age, Journal of Gerontology, Vol 15, No. 4, Oct 1960, P. 348.

(2) Rupp, T. D., and Nelson, R. C., Computer Program for Activity Determinations in the USAFSAM Whole-Body Counter, SAM-TR-72-10, June 1972.

13. Signatures:

Robert E. Tatsch

ROBERT E. TATSCH, GS-11
Health Physicist

Robert C. Nelson

ROBERT C. NELSON, Capt, USAF, BSC
Health Physicist

HEALTH PHYSICS DATA SHEET
(WHOLE BODY COUNTER)

1. LAST NAME-FIRST NAME-MIDDLE INITIAL	2. GRADE	3. SSAN

4. AFSC	5. DATE OF BIRTH	6. SECTION-ORGANIZATION-BASE

7. AGE	8. SEX	9. RACE	10. HEIGHT (Inches)	11. OCCUPATION

12. FORMER RESIDENCES (One year or longer)

	CITY	STATE	LENGTH OF STAY	TYPE OF WATER (Surface or well)
1				
2				
3				
4				
5				

13. RADIATION EXPOSURE HISTORY

A. OCCUPATIONAL

LOCATION	ISOTOPES USED	YEAR

B. MEDICAL

TEST	ISOTOPE	YEAR
2		
3		

14. DIET

☐ HIGH MEAT ☐ NORMAL ☐ LOW MEAT ☐ VEGETARIAN

15. HAVE YOU EVER BEEN IN AN ACCIDENT REQUIRING TREATMENT WITH METAL PINS, PLATES, ETC? ☐ YES ☐ NO
DO YOU WEAR DENTURES ? ☐ YES ☐ NO DO YOU HAVE AN EXCESS AMOUNT OF FILLINGS OR ANY GOLD CAPS ?
☐ YES ☐ NO PLEASE ELABORATE BELOW.

I agree to take a whole body count and relinquish the submitted information for scientific purposes as long as public reference is not made of my name.

SIGNATURE	DATE

SAM FORM DEC 69 249

ASSAY NO.	DATE	WEIGHT	H OR S	CPM IN RESPECTIVE CHANNELS x 10⁻³				CORRECTION FACTOR	nCi Cs	gms. K
				LOWER	^{137}Cs	^{40}K	HIGHER			