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FOLDER ANALYTICAL CHEMISTRY BRANCH
1972 - 1958

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November 26, 1969

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George L. Voelz, M.D., Director
Health Services Laboratory

MONTHLY ACTIVITY REPORT - ANALYTICAL CHEMISTRY BRANCH
October 21, 1969 - November 20, 1969

ROUTINE

Biological Samples (urine, feces, soil, etc.)	575
Water Samples (potable, effluent, etc.)	910
Air Dusts (carbon cartridges, filters, etc.)	1,331
Whole Body Counts	51

RESEARCH

Low level analyses of Po 210 on air dust filters were run. All reagents and equipment were checked as to possible contamination. Blanks are well within acceptable limits now.

Studied the chemical interferences to the Combined Ra, Th & Ac Procedure. Separated Ac 225 from Th 228 and Th 229 and daughters for alpha recoil study.

Completed an experiment on the retention of Rn 222 in Saran bags. In this experiment Rn concentration was followed for 24 days. The decay-corrected concentration remained constant resulting in the conclusion that Saran should be seriously considered as a substitute for the more expensive and problem-prone Mylar as a material for storing Rn 222.

Worked on the theoretical and practical aspects of the effects of alpha-particle backscattering and alpha-source area on counting efficiency. Also worked on the problem of contamination of both solid state detectors and ZnS(Ag) phosphors by recoil atoms.

Gross alpha research continued with particular emphasis on improving the yields in soil, feces and urine. Soil analyses showed considerable iron extracted. This problem was eliminated by an increase in sulfate during extraction.

Continued research of gross alpha method on bone ash samples. On 6 samples the yields were between 92-95%. Also continued research on the fluorometric determination of thorium. Worked out zirconium interference, checked linearity, concentration of flavone effects and alkalinity effects in the system. Started interference studies.

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Calibrated counters for Cr 51 on impinger plates, filters and gross samples. Continued research on decomposition of large samples using HIO_4 with other acids. Carried out research on the separation of germanium from its interferences by carrying it on silica.

A modification of the computer program OPTION was completed wherein the separate spectra that are collected for each of the four separate quadrants around the body can be reproduced in the form of isometric plots. An equally important modification of this same program has been the incorporation of a procedure to reduce the data to quantitative values for specific isotopes in specific locations. All of the 32 spectra that comprise a single whole body count or rectilinear scan can be analyzed by the computer.

A different method of supporting an individual in the rotational counter, being developed in cooperation with the Instrument Branch, will permit the rotating detectors to operate very close to the body. The person will be positioned inside a lucite pipe that fits snugly around the body. Also, the rectilinear-scanning attachment is being modified.

Preliminary to a human studies proposal, considerable information on tagged pharmaceuticals that are currently used in nuclear medicine has been obtained. Small quantities of these pharmaceuticals will be used to test our counter system.

SPECIAL ACTIVITIES

The paper "Radiochemical Determination of Sulfur-35 in Large Samples of Vegetation" by Conrad P. Willis, Dale G. Olson, and Claude W. Sill has been accepted for publication in the January 1970 issue of ANALYTICAL CHEMISTRY.

WHOLE BODY COUNTING ACTIVITIES

Whole body counts at the Laboratory were as follows: 42 termination, 15 routine, and 4 others.

Claude W. Sill, Chief
Analytical Chemistry Branch
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