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CENTER FOR HUMAN RADIOBIOLOGY

Fact Sheet on

Field Measurements of RadiumTransportable Whole Body Counter

A mobile whole body counter has been readied in the past year and a program of field studies has begun. The detector consists of an 8-inch diameter by 4-inch thick NaI(Tl) crystal mounted in a shadow shield, which is installed with associated electronic equipment in a semitrailer. The patient reclines on a bed which is moved underneath the crystal by a chain drive mechanism; thus the detector "sees" radiation from the entire length of the body, during the course of one or more scans.

The cases to be studied consist primarily of those patients who worked as dial painters prior to 1930 and on whom radioactivity measurements have never been performed. There are 263 cases of this type of whom 207 have been located. Of these, 81 are currently unwilling or unable to come to CHR, but may not object to being counted in the mobile unit near their home.

Radioactivity measurements have been scheduled for five cases in the Ottawa, Illinois area, one in Joliet, Illinois, and four near the East Coast. A preliminary calibration of the mobile counter has been made with point sources of radium and varying thickness of absorber. A preferred calibration will be obtained from high level cases who do visit CHR, and who can be counted in both the mobile unit and the arc or chair.

Assay of Radium in Buried Remains

Measurements have been made of gamma-ray spectra from a radium source at known depths in undisturbed clay at Argonne. The results have been used to calculate approximate limits of detection of radium in buried skeletal remains. It is concluded that a total skeletal content of 1 μ Ci would certainly be detected if the detector were lowered into a borehole to about 46 cm above the remains, provided that the natural radioactivity of the soil were not drastically different from that of the subsoil at Argonne. It would be necessary to approach within 30 cm to detect 0.1 μ Ci. The limit of detection would be substantially lower if the remains could be uncovered (but otherwise undisturbed), provided that the grave did not tend to fill up with ground water.

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REPOSITORY Argonne/CHR
 COLLECTION records relating to Industrial/Medical
 BOX No. Exposure to Radium
Box 121 ASH
 FOLDER Binder #33 - CHR Fact
Sheets review
Committees
History of CHR from ANL
Reports

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