

ITEM 23

PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL

mm/12/r

HEALTH PHYSICS  
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Washington, D.C. 20012

HSWP-QHP  
SOP Number 1-3\*

20 April 1979

BIOASSAY PROGRAM

1. PURPOSE. To establish requirements and procedures for internal personnel exposure monitoring except for radioactive iodine and tritium. Bioassay requirements when using radioactive iodine are contained in SOP 1-9, dated 15 November 1978. Bioassay requirements for tritium will be as described in Nuclear Regulatory Commission Staff Position Paper, "Bioassay Requirements for Tritium," dated 19 October 1977.

2. REFERENCES. Models, equations, assumptions and requirements for internal dosimetry are derived from concepts found in International Commission on Radiological Protection Publications 2, 6, 9, 10, 10a and 12; NCRP Report 57 and MIRD.

3. REQUIREMENTS.

a. The objectives of the program are to:

- (1) Indicate whether entry of radionuclides into the body has occurred.
- (2) Determine the organ or body burden and estimate resultant internal dose.

b. Monitoring for internal deposition of radionuclides will be normally performed only under the following circumstances:

- (1) When laboratory surveys indicate frequent or gross contamination.
- (2) When air sampling indicates levels of airborne contamination that might lead to internal deposition exceeding 10% of maximum permissible body (organ) burdens.
- (3) When operations are performed utilizing large quantities of particulate, gaseous or volatile materials in unsealed form.
- (4) When internal deposition of radioactive material is known or suspected.

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APPROVED BY THE WRAMC RADIATION CONTROL COMMITTEE ON 11 APRIL 1979

\* This SOP supersedes HP MEMO #2, dated 14 May 1974

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4. METHODS.

a. One or more of the following methods will be used, as appropriate, for internal exposure monitoring:

- (1) Estimation of body burden by analysis of radioactivity in excreta and relation of excretion rate to body burden through biological models.
- (2) Estimation of body burden by whole body counting and pulse height analysis.
- (3) Estimation of body burden from survey data which permit estimates of intake of radioactive material followed by estimates of body (organ) burden based on biological models.
- (4) Chromosomal Analysis.

b. The frequency of measurements depends on the effective half-life of the material in question, variations of excretion rate with time and the recent experience of individuals with respect to internal contamination levels.

c. Evaluation of internal dose will be made using methods described in ICRP 10 and MIRD methods.

d. Doses will be assigned and entered on individual's DD Form 1141 based upon evaluation. Doses will be assigned as one-time exposures and will be the total lifetime dose commitment from the exposure.

5. INVESTIGATIONS AND REPORTS.

a. All dose commitments larger than 1/10 of the annual limit will be investigated by the Health Physics Officer and will be submitted to the WRAMC Radiation Control Committee.

b. Such reports will include pertinent information regarding the dose such as:

- (1) Analysis
- (2) Time and nature of exposure

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- (3) Chemical form of isotope
- (4) Dosage calculations
- (5) Action taken or recommendations



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