I. PHYSICAL DATA

Radiation: Beta (100% abundance)
Energy:
- Maximum: 1,710 keV; Average: 695 keV
Half-life [T½]:
- Physical: 14.29 days
- Biological: Bone ~ 1155 days; Whole Body ~ 257 days
Specific Activity: 286,500 Ci/g [10,600 TBq/g] max.
Beta Range:
- Air: 610 cm [240 inches; 20 feet]
- Water/Tissue: 0.76 cm [0.33 inches]
- Plastic: 0.61 mm [3/8 inches]

II. RADIOLOGICAL DATA

Radiotoxicity:
- 6.36E-12 Sv/Bq [0.023 mrem/uCi] of ^14CO_2 inhaled;
- 5.64E-10 Sv/Bq [0.09 mrem/uCi] organic compounds inhaled/ingested
Critical Organ: Fat tissue [most labeled compounds]; bone [some labeled carbonates]
Exposure Routes: Ingestion, inhalation, puncture, wound, skin contamination absorption
Radiological Hazard:
- External Exposure - None from weak ^14C beta
- Internal Exposure & Contamination - Primary concern

III. SHIELDING

Shield ^32P with 3/8 inch Plexiglas and monitor for Bremstrahlung; If Bremstrahlung X-rays detected outside Plexiglas, apply 1/8 to 1/4 inch lead [Pb] shielding outside Plexiglas

IV. DOSIMETRY MONITORING

Always wear radiation dosimetry monitoring badges [body and/or ring] if required by your RUA.

V. DECTION & MEASUREMENT

Portable Survey Meters: Geiger-Mueller [e.g. Ludlum 44-9]
Wipe Test: Liquid Scintillation Counting is an acceptable method for counting ^32P wipe tests.

VI. SPECIAL PRECAUTIONS

* Avoid skin contamination [absorption], ingestion, inhalation, & injection [all routes of intake].
* Store ^32P (including waste) behind Plexiglas shielding [3/8 inch thick]; survey (with GM meter) to check adequacy of shielding; apply lead [Pb] shielding outside Plexiglas if needed.
* Use 3/8 inch Plexiglas shielding to minimize exposure while handling ^32P.
* Use tools to handle ^32P source and contaminated objects; avoid direct hand contact.
* Always have a portable survey meter present and turned on when handling ^32P.
* ^32P is not volatile, even when heated, and can be ignored as an airborne contaminant unless aerosolized.

VII. LAB PRACTICES

1. Disposable gloves, lab coats, and safety glasses are the minimum PPE [Personal Protective Equipment] required when handling radioactive material. Remove & discard potentially contaminated PPE prior to leaving the area where radioactive material is used.
2. Clearly outline radioactive material use areas with tape bearing the legend “radioactive.” Cover lab bench tops where radioactive material will be handled with plastic-backed absorbent paper; change this covering periodically and whenever it’s contaminated.
3. Handle radioactive solutions in trays large enough to contain the material in the event of a spill.
4. Never eat, drink, smoke, handle contact lenses, apply cosmetics, or take/apply medicine in the lab; keep food, drinks, cosmetics, etc. out of the lab entirely. Do not pipette by mouth.
6. Prevent skin contact with skin-absorbable solvents containing radioactive material.
7. Fume hoods and biological safety cabinets for use with non-airborne radioactive material must be labeled "Caution Radioactive Material".

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1 NCRP Report No. 65, p.88
2 Federal Guidance Report No. 11 [Oak Ridge, TN; Oak Ridge National Laboratory, 1988], p. 122, 156