RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: P-33 **FORMS: ALL SOLUBLE**

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 25 days

TYPE DECAY: beta $^-$
maximum energy 0.248 MeV

Hazard category: C- level (low hazard) : 0.1 to 20 millicurie
B - level (Moderate hazard) : > 20 mCi to 1 Ci
A - level (High hazard) : > 1 Ci

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The maximum range of these betas is ~ 19 inches in air and 0.009 inches (0.23 mm) in glass. The external hazard of this isotope is minimal, e.g., the glass vial holding the isotope will provide sufficient shielding to stop the betas. If skin is uniformly contaminated with P^{33} , 1 microcurie/ cm^2 will deliver a dose of 3,200 mrems/ hr to basal cells of the skin. (Porter Consultants to NRC based upon 0.257 MeV (max.) beta particles.)

HAZARDS IF INTERNALLY DEPOSITED:

The ALARA Annual Limit of Intake (ALI, based on NRC)which would deliver 500 mrem to the whole body is 600 µCi. Note: The hazards from ingestion or internal deposition of P33 in labeled nucleotide bases may be greater than for inorganic phosphates.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are of marginal value (inappropriate) for monitoring P^{33} exposure.

Urine assays may be required after spills or contamination incidents.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Always wear protective gloves to keep contamination from skin. Change gloves often.

2. P^{33} beta particles have low energies. G.M. survey meters efficiency for such energies is about 10%. Smear surveys are usually required. (If meter is approved for C^{14} measurements, it may be used.)

3. All waste in a P^{33} work areas is considered to be contaminated, unless proved to be clean by appropriate monitoring techniques . Keep work areas free of extraneous items. Segregate wastes to those with half-lives from 19 days to less than 65 days.

4. Limit of soluble waste to sewer is 100 microcuries/ day per lab.

9/97