

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: P-32

FORMS: ALL SOLUBLE

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 14.28 days

TYPE DECAY: beta⁻
maximum energy 1.71 MeV

Hazard category: C- level (low hazard) : 0.01 to 2 millicuries
B - level (Moderate hazard) : > 2 to 100 mCi
A - level (High hazard) : > 100 millicuries

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The dose rate at 10 cm from an unshielded 1 mCi (dried sample) of P³² (assuming no backscatter or self absorption in the source) is 2.7 rads per hour; the dose at 1 cm is 270 rads per hour. Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

Maximum ranges of these betas are 20 feet in air, 1/3 inch in water and tissue and 1/4 inch in plastic.

A spill of 1 μCi of P³² on 1 cm² skin will deliver a dose of 9200 mrad/hr to the basal cells of the epidermis. (Porter Consultants for NRC)

HAZARDS IF INTERNALLY DEPOSITED:

The ALARA Annual Limit of Intake (based upon NRC) which would deliver 500 mrems to the whole body is 60 μCi.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are usually required if 5 millicuries are handled at any one time, or if millicurie levels are handled on a frequent (daily) basis.

Urine assays may be required after spills or contamination incidents.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Work behind low Z shielding, preferably transparent materials. Survey frequently. Change gloves often.
2. Segregate wastes to those with half-lives < 19 days.
3. Limit of soluble waste to sewer is 10 microcuries/ day per lab.
4. P³² tends to attach to ferrous materials and to glass, weak HCl (~ 0.1 N) can facilitate removal from glass and from some impervious surfaces.

