Stanford | Environmental Health & Safety

RADIONUCLIDE SAFETY DATA SHEET

RADIONUCLIDE: P-33 | **FORMS: Soluble**

PHYSICAL CHARACTERISTICS

HALF-LIFE: 25.3 days

DECAY EMISSIONS

Gammas / X-rays		Betas / Positrons (+) / Electrons*		Alphas	
E (keV)	%	E (keV, Ave)	%	E (keV)	%
		76	100		

- Only 4 most probable emissions per decay type included. Emissions below 10 keV or 1% excluded.

STANFORD HAZARD CATEGORY

C – level (low hazard): **≤ 20 mCi**
B – level (moderate hazard): **> 20 mCi, ≤ 1 Ci**
A – level (high hazard): **> 1 Ci**

EXTERNAL RADIATION HAZARDS

Gamma dose rate, point source at 1 ft, 1 mCi:
0 mrem/h

Beta dose rate to skin, point source at 1 ft, 1 mCi:
0 mrem/h

Contamination skin dose, uniform deposit of 1 µCi per cm^2:
3200 mrem/h

INTERNAL RADIATION HAZARDS

Annual Limit on Intake: **6000 µCi** (Ingestion)
3000 µCi (Inhalation)

The values above indicate the activity taken into the body that would result in either 5 rem to the whole body (CEDE) or 50 rem to an organ or tissue (CDE).

SHIELDING

Gammas/X-rays:
N/A

Betas/electrons:
0.5 mm of plastic will absorb all emissions.

DOSIMETRY AND BIOASSAY REQS

Urine assays may be required after large spills or contaminations.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Recommended survey probe: **PGM (low efficiency)**
2. Always wear protective gloves, a lab coat, and safety eyewear to protect the skin and eyes from contamination. Change gloves often.
3. Survey work areas before, during, and after work. Instrument and smear surveys are required.
4. Segregate waste to those with half-lives of between **15 and 120 days**. Survey the waste disposal area to ensure exposure rates are less than 2 mR/hr at 1 foot.
5. Limit soluble waste to the sewer to less than **100** µCi/day per lab.

References:

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- ICRP, 2008. Nuclear Decay Data for Dosimetric Calculations. ICRP Publication 107. Ann. ICRP 38 (3).
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- Smith, D., Stabin, M. (2012) Exposure Rate Constants and Lead Shielding Values for Over 1,100 Radionuclides. *Health Physics,* 102(3): 271-291.
- 10.CFR.20 – Standards for Protection Against Radiation (2019). Retrieved from https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/

03/2020 – H. Redman; redmanha@stanford.edu