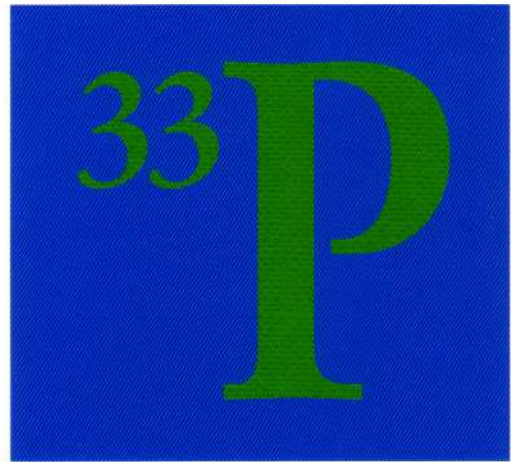




Working safely with Phosphorus-33



Radioactive half-life $T_{1/2}$	25.4 days
Principal emission	0.249 MeV beta (maximum)
Monitoring for contamination	Geiger-Müller detector
Biological monitoring	Urine samples
Annual limit on intake (ALI) by inhalation	3×10^8 Bq (~10 mCi) ** (Class D)
Maximum range in air	49 cm
Maximum range in water	0.6 mm
Shielding required	1 cm Perspex (Plexiglas). Thinner Perspex/Plexiglas down to 3 mm although adequate to reduce dose, does not have good mechanical properties.

	DAYS	0	1	2	3	4	5	6	7	8	9
DAYS	0	1.000	0.973	0.947	0.921	0.897	0.872	0.849	0.826	0.804	0.782
	10	0.761	0.741	0.721	0.701	0.683	0.664	0.646	0.629	0.612	0.595
	20	0.579	0.564	0.549	0.534	0.520	0.506	0.492	0.479	0.466	0.453
	30	0.441	0.429	0.418	0.406	0.395	0.385	0.374	0.364	0.355	0.345
	40	0.336	0.327	0.318	0.309	0.301	0.293	0.285	0.277	0.270	0.263
	50	0.256	0.249	0.242	0.236	0.229	0.223	0.217	0.211	0.205	0.200
	60	0.195	0.189	0.184	0.179	0.174	0.170	0.165	0.161	0.156	0.152
	70	0.148	0.144	0.140	0.136	0.133	0.129	0.126	0.122	0.119	0.116
	80	0.113	0.110	0.107	0.104	0.101	0.098	0.096	0.093	0.091	0.088
	90	0.086	0.084	0.081	0.079	0.077	0.075	0.073	0.071	0.069	0.067
	100	0.065	0.064	0.062	0.060	0.059	0.057	0.055	0.054	0.053	0.051

Special Considerations

- Phosphorus-33 does not require special precautions over and above those necessary for any beta-emitting radionuclide of this energy of emission.
- Always follow the Ten Golden Rules.

** Based on occupational effective dose equivalent limit of 50 mSv for stochastic risks. In Germany, the ALI value is: 4×10^7 Bq for phosphates of Zn, Sn, Mg, Bi and lanthanides. 1×10^8 Bq for all other phosphates.

The Annual Limit on Intake (ALI) data are based on the recommendations of the International Commission on Radiological Protection (ICRP) Publication 30 but may change should the ICRP Publication 60 recommendations be adopted by your national regulatory authority.

The data provided is general information which gives a basic understanding of contamination safety. You must however consult your local radiation protection adviser to ensure that you comply with all national regulations and local rules.



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