

RADIONUCLIDE SAFETY DATA SHEET					
RADIONUCLIDE: I-123			FORMS: INORGANIC OR FREE IODINE		
PHYSICAL CHARACTERISTICS					
HALF-LIFE: 13.27 hours					
DECAY EMISSIONS					
Gammas / X-rays		Betas / Positrons (+) / Electrons*		Alphas	
E (keV)	%	E (keV, Ave)	%	E (keV)	%
159	83	127*	14		
27	72	23*	8		
31	13	27*	4		
32	2	154*	2		
- 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			INTERNAL RADIATION HAZARDS		
Gamma dose rate, point source at 1 ft, 1 mCi: 1.13 mrem/h			Annual Limit on Intake: 3000 µCi (Ingestion) 6000 µCi (Inhalation)		
Beta dose rate to skin, point source at 1 ft, 1 mCi: 0 mrem/h			Critical organ: Thyroid		
Contamination skin dose, uniform deposit of 1 µCi per cm ² : 1400 mrem/h			The values above indicate the activity taken into the body that would result in 50 rem to the thyroid (CDE).		
SHIELDING			DOSIMETRY AND BIOASSAY REQS		
Gammas/X-rays: 1.2 mm of lead will reduce the gamma dose rate by 90%.			Whole-body and finger-ring dosimeters are required for handling 5 mCi or more, or 1 mCi amounts weekly . Urine assays may be required after large spills or contaminations.		
Betas/electrons: 0.3 mm of plastic will absorb all emissions. Bremsstrahlung may be created and require additional shielding.					
SPECIAL PROBLEMS AND PRECAUTIONS:					
<ol style="list-style-type: none"> 1. Recommended survey probe: NaI 2. Volatile iodine solutions should be worked with in a proper fume hood. 3. Always wear protective gloves, a lab coat, and safety eyewear to protect the skin and eyes from contamination. Change gloves often. 4. Survey work areas before, during, and after work. Work areas may require shielding to keep dose ALARA. Instrument and smear surveys are required. 5. Segregate waste to those with half-lives of less than 1 day. Survey the waste disposal area to ensure exposure rates are less than 2 mR/hr at 1 foot. 6. Limit soluble waste to the sewer to less than 100 µCi/day per lab. 					

References:

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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/>