

RADIONUCLIDE SAFETY DATA SHEET					
RADIONUCLIDE: Co-60			FORMS: Soluble		
PHYSICAL CHARACTERISTICS					
HALF-LIFE: 5.271 years					
DECAY EMISSIONS					
Gammas / X-rays		Betas / Positrons (+) / Electrons*		Alphas	
E (keV)	%	E (keV, Ave)	%	E (keV)	%
1332	100	96	99		
1173	99				
- Only 4 most probable emissions per decay type included. Emissions below 10 keV or 1% excluded.					
STANFORD HAZARD CATEGORY					
C – level (low hazard): ≤ 200 μCi					
B – level (moderate hazard): > 200 μCi, ≤ 10 mCi					
A – level (high hazard): > 10 mCi					
EXTERNAL RADIATION HAZARDS			INTERNAL RADIATION HAZARDS		
Gamma dose rate, point source at 1 ft, 1 mCi: 12.2 mrem/h			Annual Limit on Intake: 200 μCi (Ingestion) 30 μCi (Inhalation)		
Beta dose rate to skin, point source at 1 ft, 1 mCi: 47 mrem/h			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).		
Contamination skin dose, uniform deposit of 1 μCi per cm ² : 2900 mrem/h					
SHIELDING			DOSIMETRY AND BIOASSAY REQS		
Gammas/X-rays: 4.53 cm 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: <1 mm of plastic will absorb all emissions.					
SPECIAL PROBLEMS AND PRECAUTIONS:					
<ol style="list-style-type: none"> 1. Recommended survey probe: PGM or NaI 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. Work areas may require shielding to keep dose ALARA. Instrument and smear surveys are required. 4. Segregate waste to those with half-lives of greater than 120 days (excluding H3 and/or C14). 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 1 μCi/day per lab. 					

References:

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- Peplow, D. (2020) Specific Gamma-Ray Dose Constants with Current Emission Data. *Health Physics*, 118(4):402-416; 2020.
- 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/>