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Radioactive Material Safety Data Sheet

This data sheet presents information on radioisotopes only.

For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Strontium-90

Part 1 - Radioactive Material Identification

Common Names: Strontium-90 Chemical Symbol: Sr-90 or ⁹⁰Sr

Atomic Number: 38 Mass Number: 90 (52 neutrons)

A strontium compound incorporated

Chemical Form: Strontium metal Physical Form: on a ceramic insert or rolled silver

foil.

Part 2 - Radiation Characteristics

Physical half-life: 28.6 years Specific Activity (GBq/g): 5,050

Principle Emissions	^E Max (keV)	^E eff (keV)	Dose Rate (Gy/h/MBq at 10 cm)	Shielding Required
Beta* ()	546 (100%) 2,283 (99.9%) ^b	196 935	9.7 ^a	-
Gamma () / X-Rays	-	-	-	-
Alpha ()	-	-	-	-
Neutron (n)	-	-	-	-

Where Beta radiation is present, Bremsstrahlung radiation will be produced. Shielding may be required. Note: Only emissions with abundance greater than 10% are shown.

Progeny: Yttrium-90 (Yt-90) {half-life: 64.4 hours; decay progeny: zirconium-90 (Zr-90)}

Part 3 - Detection and Measurement

Methods of detection (in order of preference)

^a Handbook of Health Physics and Radiological Health, Lippincott Williams & Wilkins, Third Edition, 1998

^b This beta is produced by the yttrium-90 progeny, which quickly comes into equilibrium with the strontium parent.

 A radiation survey meter equipped with a thin-window, energy-compensated Geiger Mueller detector.
2. A radiation contamination monitor equipped with a Geiger Mueller pancake detector.
3. A radiation survey meter equipped with a plastic scintillator detector.

Dosimetry

Whole Body		Skin	$\overline{\checkmark}$	Extrem	ity	$\overline{\checkmark}$	Neutron		
Internal: Sealed sources pose no internal radiation hazard. However, in the event of loss of containment by the sealed source, all precautions should be taken to prevent inhalation or ingestion of the material.									
Critical Organ(s)):	Bone tissi	ues						
Annual dose lim	its:	Nor	n-nuclear	energy workers:	1m	Sv per ye	ear		
			Nuclear	energy workers:	a)	50 mSv	in one year		
					b)	100 mS	v total over five y	ears/	
		Pregnan	t nuclear	energy workers:	4 m	Sv over	the balance of th	ne pregna	ancy

Part 4 - Preventive Measures

Always use the principles of time, distance and shielding to minimize dose

Engineering Controls:	Sealed radioactive sources used in industrial applications should always be within a protective source housing to minimize radiation dose and to protect the source capsule from damage.			
Personal Protective Equipment (for normal handling of unsealed sources only. Always wear disposable gloves, safety glasses, personal protective equipment and clothing as appropriate to the material handled). No special PPE required.				
Special Storage Require	ments: None			

Part 5 - Control Levels

Oral Ingestion	Inhalation			
ALI (kBq)	ALI (kBq)	DAC (Bq/ml)		
1,110	740	2.96 x 10 ⁻⁷		
Exemption Quantity (EQ):	10,000 Bq			

Part 6 - Non-Radiological Hazards

None identified at this time.

OSHA Permissible Exposure Limit (PEL)

No limits set at this time

Part 7 - Emergency Procedures

The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life-threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.

Personal Decontamination Techniques

Wash well with soap and water and monitor skin

Do not abrade skin, only blot dry

Decontamination of clothing and surfaces are covered under operating and emergency procedures

Spill and Leak Control

Alert everyone in the area

Confine the problem or emergency (includes the use of absorbent material)

Clear area

Summon Aid

Damage to Sealed Radioactive Source Holder

Evacuate the immediate vicinity around the source holder

Place a barrier at a safe distance from the source holder (min. 1 meter)

Identify area as a radiation hazard

Contact emergency number posted on local warning sign

Suggested Emergency Protective Equipment

Gloves

Footwear Covers

Safety Glasses

Outer layer or easily removed protective clothing (as situation requires)

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