

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: Sr-89

FORMS: ALL SOLUBLE

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 50.55 days

TYPE DECAY: beta -
maximum energy 1.491 MeV

Hazard category: C- level (low hazard) : 0.001 to 0.1 millicurie

B - level (Moderate hazard) : > 0.1 to 10 mCi

A - level (High hazard) : > 10 millicuries

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The dose rate at 10 cm from an unshielded 1 mCi (dried sample) of Sr⁸⁹ (assuming no backscatter or self absorption in the source) is 3.1 rads per hour, the dose at 1 cm is 310 rads per hour. Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

Maximum ranges of these betas are 20 feet in air, 1/3 inch in water and 1/4 inch in plastic.

A spill of 1 uCi of SR-89 on 1 cm skin will deliver a dose of 9200 mrads/hr the basal cells of the epidermis. (Porter Consultants for NRC)

HAZARDS IF INTERNALLY DEPOSITED:

The Annual Limit of Intake which would deliver 500 mrems to the whole body is 54 uCi. (Based on ICRP)

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if a5 millicuries are handled at any one time or millicurie levels are handled on a frequent (daily) basis.

Urine assays may be required after spills or contamination incidents.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Work behind shielding, preferably transparent materials. Survey frequently. Change gloves often.
2. Segregate wastes to those with half-lives greater than 60 days (i.e. may be placed with I-125 wastes).
3. Limit of soluble waste to sewer is 1 microcuries/ day per lab.