

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: Sc-46

FORMS: ALL SOLUBLE

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 83.83 days

TYPE DECAY: beta -
maximum energy 0.357 MeV
Gamma rays 0.889 MeV (100%)
1.121 MeV (100%)

Hazard category: C- level (low hazard) : 1 mCi to 100 mCi

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The dose rate from betas at 1 cm from an unshielded 1 mCi (dried sample) of Sc-46 (assuming no backscatter or self absorption in the source) is 420 rads per hour. The exposure rate at 1 cm from 1 mCi due to photons is 10.9 Rads per hour.

Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

Maximum range of the betas is 0.03 inches in plastic. The half value layer for the gammas is approximately 1.3 cm of lead.

HAZARDS IF INTERNALLY DEPOSITED:

The Annual Limit of Intake which would deliver 500 mrems to the whole body is 81 uCi. (Based on ICRP)

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if 1 millicurie is handled.

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 but less than 90 days (i.e. may be placed with S-35 wastes).
3. Limit of soluble waste to sewer is 10 microcuries/ day per lab.