

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: S-35

FORMS: SOLUBLE, EXCEPT GASEOUS

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 87.9 days

TYPE DECAY: beta⁻
maximum energy 0.167 MeV

Hazard category: C-level (low hazard) : 0.1 to 20 mCi
B-level (Moderate hazard) : > 20 mCi to 1.0 Ci
A-level (High hazard) : greater than 1.0 Ci

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The maximum range of these betas is 43 cm in air, 0.5 mm in plastic and 0.17 mm in glass. The external hazard of this isotope is minimal; the vial holding the isotope will provide sufficient shielding to stop the betas. If skin is uniformly contaminated with S³⁵, 1 microcurie/cm² will deliver a dose of 1,200 mrad/hr to basal cells of the skin. (Porter Consultants to NRC)

HAZARDS IF INTERNALLY DEPOSITED:

Although the external hazard associated with S³⁵ is small, it is important to avoid ingestion and/ or skin contamination. Many S³⁵ compounds are volatile or degrade giving off volatile products. Open vials and work in fume hoods.

The ALARA Annual Limit of Intake (based upon the NRC values) that would result in an effective dose equivalent of 500 mrem/year is 800 microcuries. (Note: A lower ALI is used for insoluble, inorganic sulfides and sulfates.)

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are not appropriate for monitoring S³⁵ exposure.

Urine assays may be required after spills or contamination incidents.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Always wear protective gloves to keep contamination from skin. Change gloves often.
2. S³⁵ beta particles have very low energies. GM survey meters are about 10 % efficient at such energies. Smear surveys are generally required.
3. S³⁵ compounds frequently are volatile or produce volatile products; open and handle in a fume hood. When incubating samples use activated charcoal.
3. All waste in a S³⁵ work area should be considered to be contaminated unless proven to be clean by appropriate monitoring techniques. Keep work areas free of unnecessary items. Generally it is very difficult to survey the items because of self-shielding. Segregate wastes to those with half-lives from 65 to less than 90 days.
4. Limit for soluble waste to sewer is 100 microcuries/ day per lab.

