

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: As-74

FORMS: SOLUBLE

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 18 days

TYPE DECAY: e^- capture, β^-

and β^+ (39%, 32%, 29%, respectively)

maximum energies: β^- 1.36, β^+ 1.54 MeV

Energies of photons: (intensity %/d): .511 (59%), .596 (61%), .635 (14%)

Hazard category: C- level (low hazard) : .010 to 1.0 mCi

B - level (Moderate hazard) : > 1.0 mCi to 100 mCi

A - level (High hazard) : greater than 100 mCi

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The gamma exposure constant is $4.4 \text{ R-cm}^2/\text{mCi-hr}$. The amount of lead necessary to reduce exposure rate by a factor of ten is 1.5 cm. The beta dose at 1 cm from 1 mCi is 186 rad/hr. The maximum ranges of the various beta particles in various materials is as follows:

Air	520 cm
Water	0.7 cm
Glass	0.3 cm
Lead	0.06 cm

Shielding for the gamma rays will stop the beta particles.

HAZARDS IF INTERNALLY DEPOSITED:

Contamination of facilities and bodies is more of a hazard with this nuclide because of the beta particles -- use of gloves and frequent monitoring while working are important. The campus annual limit of intake (oral), based upon the amount that would give a whole body dose of 500 mrem is 160 microcuries.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and finger dosimeters must be worn when handling mCi amounts of As^{74} .

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. Survey work areas at conclusion of work. Instrument and smear surveys are required.
3. Segregate wastes to those with half-lives of less than 19 days.
4. Limit of soluble waste to sewer to 10 microcuries/ day per lab.

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