

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: I-125

FORMS: INORGANIC OR FREE IODINE

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 60 days

TYPE DECAY: e^- capture
Gamma rays 0.035 MeV (7 %)
Xrays 0.027-.031 MeV (140 %)

Hazard category: C- level (low hazard) : 1 to 200 μ Ci
B - level (Moderate hazard) : > 200 μ Ci to 10 mCi
A - level (High hazard) : > 10 microcuries

EXTERNAL RADIATION HAZARDS AND SHIELDING:

Exposure rate at 1 cm from 1 mCi is 1.5 R/hr. (Exposure varies directly with activity and inversely with square of distance from materials.)

Amount of lead required to reduce the exposure rate by a factor of 10 (1 TVL) is approximately 0.1 mm. 1/8 inch of glass would reduce the exposure rate by half. Leaded rubber gloves (0.1 mm lead = 1 TVL) are available from Health Physics.

HAZARDS IF INTERNALLY DEPOSITED:

Contamination on the skin or inhalation from air containing iodine vapors will result in internal deposition. Iodide solutions are easily oxidized and the elemental iodine will become airborne. About 70% of activity inhaled is deposited in the body and about 30% of that is deposited in the thyroid. Ingestion of 4 μ Ci, or inhalation of 6 μ Ci, would result in that gland's receiving Stanford's ALARA guideline, i.e., 5 rem.

Blocking the uptake of radioiodine with the stable nuclide is not permitted. WORK IN PROPER FUME HOODS. (See Radiation Safety Manual, part III).

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are usually required if 5 millicuries are handled at any one time or if millicurie levels are handled frequently (daily basis).

Arrange for a thyroid survey within 24-48 hours after the first procedure; thereafter, every three months.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. GM survey meters have a poor efficiency of detection for I-125. Survey by smear tests or use NaI (TI) Scintillation probes.
2. Segregate wastes to those with half-lives from 19 to less than 65 days. Assume items in work areas are contaminated unless cleared with a NaI scintillation survey meter. Wrap all waste items in plastic bags prior to placing them in waste.
3. Limit soluble waste to sewer is 100 μ Ci / month per lab.
4. Wear double gloves. Change gloves often.
5. See separate Radiation Safety Data Sheet for non-volatile or non-cleaving compounds.