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 %)
X-rays 0.027-.031 MeV (140 %)

Hazard category: C-level (low hazard): 1 to 200 µCi
B-level (Moderate hazard): > 200 µCi 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 µCi, or inhalation of 6 µCi, 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 (Tl) 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 µCi / month per lab.
5. See separate Radiation Safety Data Sheet for non-volatile or non-cleaving compounds.

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