



# Iodine-125 Information and Safety Sheet

I-125 is both an internal and external hazard to the body. External hazards are caused by contamination, poor work habits, and improper shielding. Common internal routes of entry are inhalation, ingestion, skin absorption, and puncture wounds to the skin. The critical organ is the thyroid as it can take in up to 30% of iodine entering the body.

## <sup>125</sup>I Information

Gamma: 0.035 MeV

K $\alpha$  X-ray: 0.027 MeV

K $\beta$  X-ray: 0.031 MeV

Half-life 60.1 Days

Biological half-life: 120-138 days (unbound)

Unshielded Exposure Rate for 1 mCi Point Source at 1 cm: 1.4 R/h

## SHIELDING:

Half-Value Layer (HVL or amount of material needed to attenuate dose rate 50%): 0.02mm of lead. Thin lead or lead foil is appropriate



## DETECTORS:

A survey meter with a sodium-iodide (NaI) probe is ~13% efficient. Liquid scintillation counters will detect I-125 at close to 80% efficiency.



## SAFE HANDLING:

All personnel using radioactive materials must be trained by Radiation Safety. By following the principles of ALARA and donning appropriate personal protective equipment (PPE) the hazards of using I-125 can be greatly minimized. Frequent surveys of work area and body (especially a thyroid screen) are needed due to the high dose rate to skin and thyroid risk.

When using I-125 be sure to use:

- Lab coat
- Gloves
- Lead foil shield
- NaI detector
- Protective eyewear
- Dosimeter



Good work habits include clean work stations, working on bench paper or spill trays, labeling all equipment that is (or could be) contaminated, keeping licensed material secure, clear and up-to-date inventories, and no hand-to-mouth activity such as eating, drinking, or mouth pipetting.

**In case of spills call 978-934-3373 or 978-934-3372**

**In case of emergency call 978-934-4911 (x4-4911 on campus)**