

**125I****Half life** 59.9 days**Radiations emitted**

Photons	Energy (keV)	Yield (%)
X-ray	27.47	74.1
X-ray	27.2	39.8
X-ray	31	14
X-ray	31.71	4.3
X-ray	30.94	7.2
Gamma ray	35.49	6.67

**Radiotoxicity data**

<sup>125</sup>I is classed as being of high hazard (Group 2) according to AS/NZS 2243.4.

The Annual Limit on Intake by ingestion (ALI<sub>ing</sub>) is 1.3 MBq and the inhalation limit (ALI<sub>inhal</sub>) is 2.7 MBq.

**Dose rates**

The dose rate constant is about 74 μSv/hr/GBq at 1 m.

**Safety precautions**

<sup>125</sup>I is a low energy X and gamma ray emitter that presents chiefly an internal hazard. Any <sup>125</sup>I that enters the body is taken up preferentially by the thyroid gland.

Many iodine compounds are highly volatile and may create an inhalation hazard unless carefully controlled. A fume cupboard should be used when handling activities greater than a few MBq.

For handling GBq activities or, where exposure is prolonged - as in iodination procedures - lead-loaded acrylic or glass shields may be used. Handling tools and standard laboratory PPE (gloves, lab coat, safety glasses) should be used to avoid skin contamination.

**Shielding**

Full shielding is provided by the equivalent of 1 mm Pb as either lead sheet or lead-loaded glass or acrylic.

NB shielding will not be necessary when using low activity (<1 MBq) RIA kits or other low activity pre-labelled sources.

**Licensing requirements**

Under the *Radiation Safety Regulation 2021*, a licence is required for the possession of <sup>125</sup>I sources with concentrations of greater than 1 kBq per gram and with activities of 1 MBq or greater. A use licence is also required for any persons who use such sources for research purposes.

**Disposal data**

The maximum concentration of <sup>125</sup>I in aqueous wastes released to a sewerage system is given in the Regulation as 91.3 kBq per m<sup>3</sup> i.e. 91 Bq per litre.

The concentration of <sup>125</sup>I in solid wastes disposed of to either the general or pathology waste streams must be less than 500 Bq per gram (500 kBq per kg) – i.e. half the concentration limit for licensing.

**Radiation detection and monitoring**

Only scintillation detectors are suitable for detecting low energy X and gamma emitters like <sup>125</sup>I. Instruments with a thin scintillation crystal (~3 mm) have the best efficiency.

TLD/OSL personal dosimeters may be used for personal monitoring.

**Laboratory requirements**

Indicative maximum activities:

Low level	Bench	1 MBq
	Fume cupboard	10 MBq
Medium level	Bench	3.7 MBq
	Fume cupboard	37 MBq