

Half life 59.9 days

Radiations emitted

Photons	Energy, keV	Yield %
K α 1 X-ray	27.47	74.1
K α 2 X-ray	27.2	39.8
K β 1 X-ray	31	14
k β 2 X-ray	31.71	4.3
K β 3 X-ray	30.94	7.2
γ 1	35.49	6.67

Radiotoxicity data

¹²⁵I is classed as being of medium to higher hazard (group 2) according to AS 2243.4

The Annual Limit on Intake by ingestion (ALI_{ing}) is 1.3 MBq and the most restrictive inhalation limit (ALI)_{inhal} is 2.7 MBq.

Dose rates

The dose rate constant is about 75 μ Sv/hr/GBq @ 1 m.

Safety precautions

¹²⁵I is a low energy X and gamma ray emitter that presents chiefly an internal hazard. Any ¹²⁵I 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 (see **Laboratory requirements**).

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. More detail is given in the guideline *Safe Use of Radioactive Iodine Compounds*

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 2010, a licence is required for the possession of ¹²⁵I sources with concentrations of greater than 1 kBq per gram and with activities of 1 MBq or greater. A user licence is also required for any persons who use such sources for research purposes.

Disposal data

The maximum concentration of ¹²⁵I in aqueous wastes released to a sewerage system is given in the 2010 Regulation as 91.3 kBq per m³ i.e. 91 Bq per litre.

The concentration of ¹²⁵I 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 ¹²⁵I. Instruments with a thin scintillation crystal (~3 mm) have the best efficiency.

TLD personal dosimeters may be used for personal monitoring (for details see the *Personal Radiation Monitoring Safety Guideline*).

Laboratory requirements

Low level lab guidance activities

Bench: 1 MBq
Fume cupboard: 11 MBq

Medium level lab guidance activities

Bench: 3.7 MBq
Fume cupboard: 37 MBq

NB: While AS 2243.4 sets greater activity limits, the guidance activities are maximum amounts that should need to be used in most research projects.