

IRR99 Requirements

HSE NOTIFICATION LEVEL: for work **1 MBq**
 for inadvertent release or spill **10 GBq**
 for loss or theft **10 MBq**

CONTROLLED AREA needs to be considered if activity exceeds **39 MBq**
 (see below for consideration of supervised area limits)

SUPERVISED AREA will be required if activity exceeds **10 MBq**

Supervised Area Limits

Grade C lab - non-volatile work - up to 156 MBq
 - volatile work in FC - up to 39 MBq

Grade B lab - non-volatile work - up to 1.6 GBq
 - volatile work in FC - up to 390 MBq

ANNUAL LIMIT OF INTAKE (ALI) **1.3 MBq**
 (equivalent to dose of 20 mSv)

Determining the need for Supervised and Controlled Areas

Although dose rates can be high close to an unshielded source, I-125 requires only a thin sheet of lead, or leaded acrylic sheet, to provide adequate shielding (half value layer = 0.02mm of lead). Work with amounts greater than a few MBq will normally involve iodinations and these should be performed in a fume cupboard. This will restrict exposure to dose rates in excess of $7.5\mu\text{Sv h}^{-1}$ to the-hands, and with the use of appropriate shielding experience would indicate that minimal whole body doses will be received.

The internal hazard considerations are therefore the most restrictive. Kit work with upto 10 MBq in use can be performed in a non-designated area. Opening of stock bottles, work with volatile compounds and work with amounts greater than 10 MBq shall be performed in a fume cupboard. As has already been stated, together with appropriate shielding, this will take care of the external hazards. It will also take care of the air contamination hazard, providing all waste materials, dilutions, aliquots or fractions are kept in the fume cupboard until the work is completed, or if removed prior to this, are suitably contained or in a non-volatile state.

Large iodinations should be carried out in the fume cupboard of a Grade B laboratory. This grade of laboratory will permit up to 390 MBq to be used at a supervised area level providing thorough monitoring is carried out after each iodination, or batch of iodinations where several are performed on the same day, and details of this monitoring will need to be recorded. Any spills should be cleaned up immediately and not used as a basis for designation as a controlled area.

Special Considerations and Monitoring

The volatility of iodine is the most significant problem with this isotope. Solutions containing iodide ions should not be made acidic nor stored frozen, as both these procedures lead to the formation of volatile elemental iodine. Because some compounds of iodine can penetrate gloves, two pairs should be worn, changing the outer pair frequently. Always take note of the user precautions provided by the supplier.

Irrespective of the amounts of I-125 in use, there is the obligation to keep doses as low as reasonably practicable, and strict adherence to the laboratory rules is essential. Dispensing of stock material should be carried out behind a leaded acrylic screen. When working with quantities greater than 10 MBq, periodic thyroid counts should be performed to monitor personal uptake. Monitoring of the laboratory should be performed on a regular basis to ensure that contamination is being kept below 27 Bq cm^{-2} . Expected monitor responses at this level are: -

Counts above Bg for 37 Bq cm^{-2}	Mini 42A/B 20	Mini 44A/B 140
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