

Document Number:	SASoM/EQUIP/068.v2
Title:	Use and Maintenance of the IBL437C Gamma Irradiator
Version:	v2
Author:	Peter Mullen

Effective from:	09/05/2019	
Valid to:	08/05/2024	

SOP History		
Number	Date	Reason for Change
v1	09/05/2014	Original
V2	09/05/2019	Five Year Update

#### 1.0 Purpose –

This SOP describes the current procedure for the use of the IBL Gamma Irradiator for use in Room 146B at the St Andrews School of Medicine (SASoM).

#### 2.0 Scope -

This SOP applies to the staff in the SASoM involved in performing irradiation of samples using the IBL Gamma Irradiator.

# 3.0 Responsibilities -

All staff involved in using the irradiator are responsible for ensuring that the methods are followed in accordance with this SOP.

All staff must have read and signed the relevant risk assessment documents before performing this procedure. All staff need to be registered radiation workers and need a PIN to enter the facility.



# 4.0 Procedure –

## **Operation Procedure**

- 1. Any departure from these instructions could cause damage. IF IN DOUBT ASK FIRST.
- Room is alarmed and requires swipe access and pin code (see information in the Medical & Biological Science Building Handbook under SECURITY-GAMMA SOURCE (Room 146B)
- 3. Collect the keys from the secure location. Enter the rooms using swipe card and PIN access. Unlock the inner door and swipe in. Details of this procedure will be explained to you as part of the training process.
- 4. Switch on the irradiator using small key. Test lights using blue buttons.
- 5. Load irradiation canister with samples using appropriate jigs and lock lid in position. The dose rate is not uniform across the chamber so make sure you place the samples in a central position (see dose rate map).
- 6. Set time press P, hold, enter number seconds, press P and R together to store time.
- 7. Open door to canister chamber.
- 8. Rotate small spindle hub so spokes are pointing towards you (rotates clockwise only).
- 9. Slide canister into chamber with 3 guide-slots at base facing you.
- 10. ROTATE CANISTER ABOUT 90° SO TWO RED LINES LINE UP THIS LOCKS THE CANISTER INTO POSITION AND PREVENTS JAMMING!
- 11. Close door carefully, do not slam (magnetic catch and detector).
- 12. Press green start cycle button. The canister will rotate into the beam.
- 13. At end of cycle, remove canister.
- 14. Close door, switch off and remove key.

# NOTE

If any faults occur, failure of lights, mains failure, canister not rotating correctly, SWITCH OFF AND CONTACT Alan Stewart.

Irradiation can be interrupted by pressing RED button – a key is needed to reset this once pressed.

# Safety and Emergency Procedures

1. The machine is shielded and dose-rates at all surfaces are well below any limits. No controlled or supervised areas need to be designated in connection with the operation of the unit, since the dose rates at all accessible surfaces are less than 0 5  $\mu$ Sv/h thus persons cannot receive a dose of I mSv in a year (50 weeks, 40 hours/week).

# THERE IS THEREFORE NO RADIOLOGICAL HAZARD. Badges are thus not required.

2. Machine is connected to the mains and left switched on at wall plug. To isolate in electrical emergency push in red crash button on front panel (top left)



- 3. In event of any other emergency or departure from operation listed below, contact: Alan Stewart or Clive Masson.
- 4. As the inside of the machine is TOTALLY INACCESSABLE, it is essential that
  - (a) no liquids get into the machine.
  - (b) nothing jams inside the machine.
  - (c) care is taken with the irradiation canister, which must not be dented/bent

#### IONISING RADIATIONS REGULATIONS, 1999 - PART VI

	Sealed Source Record
LOCATION	146C
RADIOISOTOPE	<sup>137</sup> Cs
SERIAL NUMBER:	Source Number 409; Irradiator 437 C No. 91-344
ACTIVITY:	62.9 TBq (17 <sup>th</sup> October 1991)
DATE OF RECEIPT:	12 <sup>th</sup> December 1991
SUPPLIER:	CIS (UK) Ltd.

# 5.0 Personal protection -

A Howie laboratory coat and lab gloves must be worn at all times if irradiating cell samples.

# 6.0 Spillages -

Always clean up any spills immediately after use, only you know what you have spilt and are aware of its hazard.

Spillages should be mopped up with paper towel, disinfected with 70% ethanol and finally washed with detergent.

# 7.0 Training -

All staff must be trained to operate the IBL Gamma Irradiator by qualified staff before using the machine on their own. They also need to be trained in radiation protection and the security arrangements.



# 8.0 Related documents -

8.1 Medical & Biological Science Building Handbook under SECURITY-GAMMA SOURCE (Room 146B)

# 9.0 Approval and sign off –

Author:		
Name:	Peter Mullen	
Position:	Research Fellow	
Signature:		Date:
Management Appr	oval:	
Name:	Peter Mullen	
Position:	SOP Administrator	
Signature:		Date:
QA release by:		
Name:	Alex MacLellan	
Position:	QA Manager	
Signature:		Date:





# STANDARD OPERATING PROCEDURE

Please sign below to indicate you have read this S.O.P and understand the procedures involved.

NAME	POSITION HELD	SIGNATURE	DATE
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