

LOCAL RULES
Ionising Radiations Regulations 1999
Barts and The London NHS Trust / Nukem Ltd

**Post Mortem Examination of Mr A Litvinenko, High Risk Mortuary,
The Royal London Hospital**

1 INTRODUCTION

These Local Rules are issued under the Ionising Radiations Regulations 1999 and Approved Code and are the means of complying with these Regulations for the post mortem examination of a body containing polonium-210 (Po-210).

Working procedures have based on the document produced by [REDACTED] AWE, 'Post Mortem Procedures for Alexander Litvinenko', discussion with mortuary staff and agreed by the BLT and Nukem RPAs.

2 RADIATION PROTECTION SUPERVISOR (RPS)

The Radiation Protection Supervisor must ensure that the requirements of these Local Rules and any Guidance Notes are complied with in the area for which they are responsible.

The Radiation Protection Supervisor for this procedure is [REDACTED] Nukem Ltd

3 RADIATION PROTECTION ADVISORS (RPA) and RESPONSIBLE PERSONS

Barts and the London NHS Trust (BLT)

RPA: [REDACTED] Clinical Physics. Mob [REDACTED]

Atomic Weapons Establishment (AWE)

RPA: [REDACTED] Police RPA. Mob [REDACTED]

Nukem Ltd

RPA: [REDACTED] Mob [REDACTED]

4 DESIGNATION OF AREAS

The High Risk Mortuary Room is designated a controlled area for the duration of the post mortem examination, and until declared free of contamination following the procedure. The door to the main mortuary will be sealed. Access will be via the dedicated changing room.

Clean and dirty monitoring areas will be set up at either side of the changing room entrance to High Risk Mortuary. The clean monitoring area will be designated as a supervised area

The body will be delivered via the mortuary bay. Before and after the examination the body will be stored in a dedicated high risk fridge.

The designated area will be under the control of Nukem Ltd. The other organisations working in these areas must cooperate to ensure compliance with these procedures

Access to controlled areas must be under written systems of work

4 DESIGNATION OF STAFF AND PERSONAL MONITORING

- Staff employed by AWE and Nukem Ltd are classified persons and must comply with dosimetry requirements set out by their RPA

- Other staff are non-classified.
- Staff working in the controlled area may be required to provide a urine sample after the procedure for internal dosimetry.
- Investigation level: The investigation level for this procedure is set at 5 mSv
- Pregnancy: Pregnant staff may not enter the controlled or supervised areas

6 ACCESS TO CONTROLLED AREAS

- All persons entering the controlled area must be briefed on the content of these Local rules and any other working procedures before entering the area
- Classified persons may enter the controlled area with prior permission from their RPA
- Non classified persons may enter the controlled area with permission from their RPA and must follow the written systems of work in these Local Rules
- The following persons may be present in the controlled area during the examination
 - Home Office pathologist personnel
 - Police Exhibits Officer
 - Police Forensic Evidence Personnel
 - HPA Contractor supplied radiation surveying staff monitors
- The following persons may be present during the monitoring and decontamination phase
 - HPA Contractor supplied radiation surveying staff monitors
- Other persons may be present as approved by the RPAs

7 EQUIPMENT REQUIRED

- Post Mortem Table Sealed in PVC.
- Post Mortem Equipment.
- Absorbent padding materials
- Health Physics Contamination Monitoring instruments
- Appropriate bags suitable for collecting post mortem items.
- Sealable plastic containers suitable for collecting the post mortem items.
- Contractor Equipment suitable for the processing and bagging of waste, and radiation monitoring and decontamination

8 WORKING PROCEDURES

The following steps are guidelines and may be varied at the discretion of the pathologist, the lead radiation surveyor or the RPAs.

8.1 *Delivery of body*

- The body is currently at the St Pancras mortuary. The body is double bagged and contained in a transport coffin.
- On arrival in the transport bay, the outer surface of the transport coffin and the interior of the vehicle must be monitored for contamination. The coffin will then be transferred to the mortuary fridge area and opened.
- The surfaces of the body must be monitored for contamination. Any contamination found must be removed before proceeding further.

- The body will be transferred to a tray in a dedicated high risk fridge by mortuary staff, wearing double gloves, surgical gown and plastic aprons.
- Prior to the transfer the tray must be covered with plastic sheeting and lined with absorbent material.

8.2 Imaging of body

- If imaging is required this will be carried out in the fridge area. The imaging table must be covered with plastic sheeting and the body transferred to the imaging table. The body bag must not be opened. The imaging table and the surrounding area must be monitored after the body is returned to the fridge

8.3 Preparation of the High Risk Mortuary

1. Security arrangements shall be made to ensure the security of the post mortem room.
2. All unnecessary equipment must be removed from the room
3. The post mortem table should be wrapped with plastic sheeting
4. Prior to the starts of the procedure the ventilation system should be disabled
5. The area around the post mortem site must be laid with plastic sheeting and sealed to the floor at the edges with tape. The area should be adequate for all personnel to undertake their tasks on the plastic sheeting without the need to move themselves off the plastic.
6. All foreseeable tools, containers etc should be immediately available at the site so as to avoid the need for movement off the plastic sheeted area once the post mortem has started. (An additional runner should be considered as a precautionary measure in case there is a need to obtain further items.)
7. A separate personnel clearance monitoring area adjacent to the main sheeted plastic area, by the entrance to the changing area should be sheeted out with plastic and sealed at the edges with tape.
8. The clean monitoring area should also be sheeted with plastic and sealed with tape.
9. The body should be transferred on its tray from the fridge to the examination table via a trolley. Plastic sheeting should be arranged to minimise contamination of the outer surfaces of the body bag
10. A waste bag should be taped at a suitable location to accept waste arising from the post mortem.
11. Signage to be placed at entrance to high risk area changing rooms
12. Emergency Evacuation procedures are agreed.

8.4 Dress State

All personnel who will have direct and close contact with the body shall wear:

- A surgical gown / Tyvex overalls
- A powered hood respirator.
- Double gloves with the inner gloves consisting of a stainless steel material.
- An additional layer of changeable outer gloves should be worn.
- Outer Tyvex overalls should be worn with a waterproof apron on top plus additional waterproofing of the exposed arms.
- Boots.
- Double Overshoes.
- A lightweight waterproof apron should be taped around each arm.

Other Participating Personnel present in the room during the Post Mortem:

- A powered hood respirator.
- Double gloves with the inner gloves with the inner gloves taped around the cuffs.
- An additional layer of changeable outer gloves should be worn.
- Double Tyvex coveralls should be worn (this will aid the decontamination process).
- Boots
- Double Overshoes.

8.5 Post Mortem Procedure

1. The pathologists should undertake the activities of the post mortem as per their standard procedures.
2. Power tools and water spray should not be used

3. The post mortem should be undertaken without removing the corpse from the body bag. The body should be accessed by cutting away the parts of the body bag around the areas of interest.
 4. After removal of a tissue sample from the body, the sample should be weighed and placed by the same individual into a suitably sized standard receptacle that is held by a second individual. This transfer process should be undertaken as close together as possible so to minimise the spread of fluids away from the body.
 5. The sample container should be passed to a health physics monitor and placed into a clean bag. This sample should be removed to a storage area. The samples should be monitored when taken out of the storage area for packaging.
 6. All three individuals should change their outer gloves if required and place them into the waste receptacle.
 7. The body should not be stitched at the end of the procedure
- Once all samples have been collected and the post mortem is complete the body and the original bags should be double bagged again and monitored
 - All personnel starting with the pathologists should move to the clearance area one at a time and undergo a standard barrier procedure to remove themselves from a contaminated environment.
 - Standing on the dirty side they should remove all of the outer clothing and remain in their surgical gown, their inner gloves and their tyvex coveralls. The outer clothing should be placed in the "dirty" area. They should remove their outer overshoes and step forward onto the clean area of plastic. The radiation surveyor should monitor and decontaminate the personnel out of the area leaving all items in the dirty area for removal by the decontamination contractor.

9 SAMPLES

The samples should be packaged and monitored by the HPA supplied contractor in preparation for transfer to their next destination. (**Note:** the range of alphas in liquid is in the order of 50µm).

10 REMOVAL OF BODY

Body to be removed for burial on the same day

The body to be rebagged following the postmortem, monitored and transferred to the fridge.

Body to be transferred to coffin

11 WASTE

All waste arisings shall be monitored by a contract agency provided by the Government Decontamination Service (Nukem Ltd) once the Post Mortem is complete and personnel are monitored out. The contractor shall undertake collection of the material and undertake activities including a certificated clearance survey to re-instate the area to pre-post mortem radiological status. Disposal of waste arisings will be arranged by the Government Decontamination Service.

12 CONTINGENCY PLAN

Emergency Response

An AWE Health Physics monitoring team will be on location as a standby team to enable monitoring of personnel out of the post mortem location in the event of an emergency.

- Wound to pathologist

Outer contaminated clothing to be removed. Pathologist to go to supervised area where wound will be washed, encouraged to bleed and monitored.

- Fire

Personal to remove outer contaminated clothing, leave in mortuary and evacuate by agreed route

Signed and dated