

**Risk assessment for Ionising Radiation Regulations 2017**

**Location of work**

Worcestershire Acute Hospitals NHS Trust:  
Operating Theatres at:-  
Alexandra Hospital, Redditch and Kidderminster Treatment Centre

**Date of commencement**

November 2018: Update of existing risk assessment to Integrated radiological Services – (IRS) format.

**Description of work**

Injection of 40 MBq of Tc 99m radioisotope into breast on the afternoon before next day surgical excision of sentinel lymph node(s)-SLN- containing Tc 99m nanocolloid radioisotope at the above operating theatres. In addition to excision of lymph nodes, wide local excision (WLE) or mastectomy may also take place.

There may also be supporting procedures eg wire localisations, skin marking procedures taking place prior to surgery but may be post radionuclide injection.

Imaging of excised specimens eg WLE may also be required per operatively.

All injections of radionuclide take place within the Nuclear Medicine Department at Worcestershire Royal Hospital.

**Source of radiation**

*Injected patient and excised specimens*

Radionuclide	Principle emissions & energy	Half life	Risk Group (Lacroix)
Technetium – 99m	Gamma (141 keV, 89%)	6 hours	4 (Green)

**Hazards (including radiation accidents)**

1. External radiation exposure from:
  - direct contamination of the skin
  - external radiation exposure from the patient post injection and syringe during administration

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<p>2. Internal radiation exposure from:</p> <ul style="list-style-type: none"> <li>• Ingestion via contaminated hands or objects which come into contact with the mouth</li> <li>• Transfer through skin e.g. contamination of an open wound</li> </ul> <p>3. Radiation accidents/incidents</p> <ul style="list-style-type: none"> <li>• Spillage of radioactive material</li> <li>• Contamination incident</li> <li>• Fire</li> </ul>
<p><b>Staff involved</b></p> <p>Surgeon and theatre support staff.</p>
<p><b>Other persons involved</b></p> <p>Ward staff Porter./ transport staff Radiology staff performing pro-operative procedures post radionuclide injection eg Wire localisations</p>

<p><b>Exposed groups and dose constraints e.g. members of the public</b></p> <p>External radiation levels and the contamination risks are so low that dose constraints do not need to be considered.</p>
<p><b>Existing control measures</b></p> <ol style="list-style-type: none"> <li>1. Local rules (SLNB specific annex) for radiation safety including the following: <ul style="list-style-type: none"> <li>Details of appointed officers – RPA and an RPS to for each theatre site)</li> <li>Contamination monitoring procedures</li> <li>Procedures for storage and disposal of radioactive waste.</li> <li>Contingency plans for fire and contamination incidents</li> <li>Procedures for pathology specimens</li> </ul> </li> <li>2. Information, instruction and training- performed by IRS Sept 2018</li> <li>3. RPS Theatres to attend training - provided by IRS- (Sept 2018)</li> <li>4. Training carried out in house for all other staff.</li> </ol>

**Risk assessment (Normal Working and Radiation Accidents)**

Exposed Groups	Annual dose estimate (mSv)	Risk level
Surgeon	< 1	Low
Porters/Nurses/others	< 1	Low
Pregnant workers	< 1	Low

**Additional Control Measures Required**

All theatre staff to be aware of and trained in the correct measures to take when using Tc-99m.  
Quality control of Gamma Scintillation Probe.  
All staff to be aware of the correct method of waste disposal and decay storage of isotope.  
Staff to undergo training by IRS as appropriate

**Action to be taken**

Required action	Responsible Person (Initials)	Required Completion Date	Actual Completion Date
Training of theatre staff by IRS	IRS	End Sept 2018	10 Sept 2018
Appendix to be added to Local Rules specific to work relating to SLN biopsy in Theatres	David Palmer	Sept 2018 but extension to end October 2018 requested	7 Nov 2018
Audit that procedures relating to risk assessment/local rules and procedures regarding monitoring/specimen storage and waste storage and disposal are being performed correctly.	Mathew Trotman	Sept 2018 but extension to end October 2018 requested	On Going-commenced Oct 2018

<b>Assessors(s) Name</b>	David Palmer		
<b>Designations</b> <i>E.g. Radiation Protection Supervisor</i>	Superintendent Radiographer Nuclear Medicine and DEXA RPS Nuclear Medicine and Site Officer Radioactive Materials Worcestershire Royal Hospital.  DDI 01905 760640 Int ext 30250  David.Palmer16@nhs.net		
<b>Signature(s)</b>	R D Palmer		
<b>Date</b>	07/11/2018		

Next Review Date	Reviewer Initials	Comments

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