

# RISK ASSESSMENT RECORD FORM

Please refer to the accompanying guidance when completing this form

## Section 1: Administrative Details

Name of Assessor: Job Title: Date of Assessment:

## Section 2: Activity/Task

### Activity /Task

Provision of an MRI service

### Risk:

Asphyxiation or cold burns due to cryogenics in MRI

### Area affected:

MRI

### Source of Risk (Background):

Superconducting MRI magnets are maintained in a superconducting state by immersion in liquid helium contained in a vessel within the scanner housing. The helium normally boils off very slowly, but could do so extremely rapidly if the magnet were to quench by accident or intentionally in an emergency situation. If the resulting helium gas was to enter the magnet room, it could cause cold burns to patients or staff or displace sufficient gas to cause asphyxiation.

### Supporting Evidence:

Published data on hazards of MRI scanners. MHRA guidelines on safe use of MRI [1].

### Factors the risk contains: (if for COSHH include route of exposure, length of exposure time and exposure limits)

Cryogenics, pressure vessels.

### Potential Consequence if risk is realised:

- Serious injury due to cold burns, death due to asphyxiation.

## Section 3: Current Control Measures

A quench pipe is connected to each MRI scanner to vent cryogenic gases to the atmosphere. The quench pipe outlet has clear signage and is positioned in such a way as to restrict access within 3 m.

These quench pipes are subject to annual maintenance checks in accordance with MHRA recommendations [1] to ensure that there is no blockage or damage.

Each magnet room is fitted with an oxygen monitor to detect oxygen depletion, the alarm panel for which is in the MRI control room.

Each magnet room is fitted with an emergency extract fan, designed to activate when oxygen levels are depleted, to extract cryogenic gases from the room.

Emergency instructions are available in each MRI unit detailing how to react to a quench.

The manufacturer of the MR system, as part of their service contract, is responsible for providing the services of a 'competent person' as defined in the Pressure Systems Safety Regulations 2000 [2].

**Comment [SK1]:** Sites may wish to attach a plan showing the route of the quench pipe and the position of the outlet.

**Comment [SK2]:** Sites will need to check whether this is true under the terms of their service agreements.

<b>Section 4: Risk Rating</b> <i>Use the consequence, likelihood and risk score tables in the accompanying guidance to identify the scores below.</i>
<b>Consequence Score:</b>
<b>Likelihood Score:</b>
<b>Risk Score:</b>
<b>Initial Risk Grading:</b>

<b>Section 5: Risk Reduction Options</b>		
Options	Revised Risk Score	Cost
Check quench pipe signage and positioning		
Check quench pipe maintenance arrangements		

<b>Section 6: Directorate/Divisional Agreed Actions</b>		
Actions	Lead	Target Date
Perform checks described above. Repeat at annual safety audit.		

<b>Section 7: Risk Grading</b>				
	Consequence	Likelihood	Score	Grade
Initial:				
Current (will be the same as initial to begin with):				
Residual:				

<b>Section 8: Review</b>
Risk Owner:
Planned Review Date:

<b>Reference</b>	
[1]	D. Grainger, "Safety Guidelines for Magnetic Resonance Imaging Equipment in Clinical Use," Medicines and Healthcare Products Regulatory Agency, Mar. 2015.
[2]	The Pressure Systems Safety Regulations 2000 (S.I. 2000 No 128).