COSHH Risk Assessment Form

1) Department: MRI **Ref no:**

Substance / Activity

Substances: GE MRI phantoms. Please inform MRI Physics if any vendor phantoms are not included in this list.

- Phantom Nickel Chloride Hexahydrate Solution (article number/formula:183 539124)

  Synonyms: PHANTOM NICKEL CHLORIDE; HEXAHYDRATE SOLUTION; PHANTOM 46-282280G1; P9300VD; HEXAHYDRATE SOLUTION ; 46-265622G2; 46-265826G6; 46-265635G6; 46-287780G2; 46-317605G1; 46-317604G1; 46-317626G1; 46-317586G1; 46-282280G1; 46-287900G2; 46-317776; 46-317776G1; 2131027-2; 2131027-3; 2135650; 2135660; 2195822; 2321556; 5117092-6; 5118458; 5342679; 5342680; 5342681; 5343347; P9330LH; P9300ZW; P9300LU; P9300LV; P9300VD; ACR PHANTOM; 15035;
  CAS Number: 7791-20-0 Chemical Family: nickel chloride Formula: NiCl2*H2O in solution of H2O; QR64800000

- Phantom 46-265622G1

  Synonyms: PHANTOM 46-265622G1; 46-258559G1; 46-258582G1; 46-287325G1; 46-265826G5; 46-282978G1; 46-287379G1; 46-271279G1; 46-265635G5; SOLUBLE COPPER SALTS COPPER(II); SULFATE BLUE; COPPER BLUE; STONE BLUE VITRIOL; COPPER SULFATE:CUPRIC SULPHATE; ROMAN VITRIOL; COPPER SULPHATE PENTAHYDRATE; 46-287780G1; 46-287780G3; 46-320830G1; 2135649; 2135647; 2135648; 2306642 ;
  CAS Number: 7758-98-7 / 7758-89-8 (Pendahydrate) Formula: CuSO4 Reg. Toxic Number: GL8800000

- Phantom 46-287899G1

  Synonyms: PHANTOM 46-287899G1; MANGANESE (II) CHLORIDE; MANGANESE DICHLORIDE; MANGANOUS CHLORIDE MANGNESE (II) ;CHLORIDE (1:2); 46-287899G1; 2135652; 2360037;
  CAS Number: 7773-01-5 Reg. Toxic Number: 0092625000

- MRS Phantom

  Synonyms: 2152220

- G3 Phantom

  Synonyms: 2360034; 5325953-6, 5325953-7, and other phantoms with G3 phantom solution

Work Activity: MRI scanner quality control measures using sealed phantom / test objects which contain the above substances

Is there a safe system of work for the activity?	**Yes**
Can the hazardous substance be substituted with a safer alternative?	**No**

Product / Trade Name / Mixture etc	**Hazard Classification** (Corrosive, Irritant, Toxic, Hazardous to the environment, Health Hazard, Explosive, Oxidising, etc)	**Chemical Nature** (Aerosol, dust, fume, gas, liquid, powder, etc)	**Route of Entry / Exposure** (Absorption, Ingestion, Inhalation, Injection, Splash)
Phantom Nickel Chloride Hexahydrate Solution	Toxic in large quantities, irritant and hazardous to the environment, health hazard (allergen and low risk carcinogen)	Liquid	Inhalation, absorption (skin or eye contact) or ingestion
46-265622G1	Irritant and hazardous to the environment		
46-287899G1	Irritant and health hazard (allergen)		
MRS phantom	Irritant		
G3 phantom	None		

Individuals or groups exposed	Radiographers, Healthcare Support Workers, Physicists, Domestics
Duration of exposure eg. hours / day	Work activity lasts <2mins per day. Exposure should not occur. Exposure will only occur if sealed source used during the work activity is compromised i.e. the test object is broken.
Estimated level of exposure*	Low

*Contact Occupational Hygienist / Health & Safety Practitioner for advice if required

Does the substance have a Workplace Exposure Limit? (WEL)	**No**

*Contact Health & Safety Practitioner for advice if required

Is a Safety Data Sheet Available?	**Yes**

2) Existing Precautions

Summarise current controls in place Include any procedures for Storage, Transport, Handling, Disposal and Maintenance as well as the general use of the substance.	**Describe how they might fail to prevent adverse outcomes.**
Phantom liquid is in a sealed container. Exposure would only occur if container is damaged. Damaged phantoms must not be used. Any spillages to be highlighted to all staff in immediate vacinity until spillage is removed such as to avoid slips and falls	Adverse outcomes would only be possible if the phantom develops a leak or is damaged (e.g. dropped). However, this is not in itself an adverse outcome. The following would need to also occur in addition to the above for an adverse outcome to occur. The appropriate disposal and cleaning protocol was not known or was not followed.

Leaking or damaged phantoms will be reported to the manufacturer with a view to obtaining a replacement. Ensure staff are aware of how to safely dispose of the test object and its contents should it become be damaged or broken.This might be through MR local rules, separate guidance (e.g. a SOP) or educational briefing.	Personal protective equipment used during disposal failed. Someone was able to ingest the liquid.

Emergency Procedures	
First Aid Remove contaminated clothing at once. Seek medical assistance immediately if allergic reaction is observed, particularly in the respiratory tract. Show the relevant safety data sheet to the doctor in attendance. **Inhalation**: Get some fresh air. If irritations, dizziness or nausea occur, seek medical assistance. Get medical attention immediately if symptoms occur. If breathing is irregular or stopped, administer artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. **Skin contact**: Wash thoroughly with soap and water. If symptoms persist, seek medical assistance. **Eye contact**: Flush with plenty of water while holding eyelids apart for at least 15 minutes. Remove contact lenses, if worn. Seek medical assistance. **Ingestion**: Immediately flush mouth and afterwards drink plenty of water. Do not induce vomiting without medical advice. Seek medical assistance. **Self-protection of the first aider**: Avoid skin contact. **Information to physician**: Phantoms containing Nickel may cause sensitization of susceptible persons. Use of epinephrine may	**Spillages** Avoid skin and eye contact as well as the inhalation of aerosols (use appropriate PPE). Take up with sand, sawdust or all-purpose binder. Wash after with water. Do not allow to enter sewage system, groundwater or soil. To prevent entering into sewage system, water sources or surface water, establish a barrier of sand, earth or other appropriate measures. Inform the local authorities if the entering cannot be avoided. Ensure compliance with disposal regulations.

be indicated. For Nickel-based phantoms: symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident. Most important symptoms and effects, both acute and delayed: • Nausea • Headache • Allergic reactions	

Level of Risk

Is the control of this risk adequate? Give more than one risk level if the assessment covers a range of circumstances. You can use the 'matrix' to show how 'likelihood' and 'consequences' combine to give a conclusion. Also, be critical of existing measures: if you can think how they might fail, or how they could be improved, these are indications of a red or orange risk.

Risk Matrix

Likelihood	Impact / Consequences				
	Negligible	Minor	Moderate	Major	Extreme
Almost Certain	Medium	High	High	V High	V High
Likely	Medium	Medium	High	High	V High
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

Very High High Medium Low

Health Surveillance / Atmospheric Monitoring	
Is Health Surveillance or Atmospheric Monitoring of staff required? (If yes, contact the Occupational Health Service/ Occupational Hygienist)	No

New & Expectant Mothers	
Are additional control measures required for new & expectant mothers?	Yes
If yes, please specify: New and Expectant Mothers should not clean up any spillages due to (albeit low) risk of aerosols.	

3) Action Plan - if risk level is High (Orange) or Very High (Red)

Use this part of the form for risks that require action. Use it to communicate, with your Line Manager or Risk Coordinator or others if required. If using a copy of this form to notify others, they should reply on the form and return to you. Check that you do receive replies.
Describe the measures required to make the work safe. Include hardware – engineering controls, and procedures. Say what you intend to change. If proposed actions are out with your remit, identify them on the plan below but do not say who or by when; leave this to the manager with the authority to decide this and allocate the resources required.

Proposed actions to control the problem List the actions required. If action by others is required, you must send them a copy	By Whom	Start date	Action due date

4) Action by Others Required - Complete as appropriate: (please tick or enter YES, name and date where appropriate)

Report up management chain for action	
Report to Estates for action	
Contact advisers / specialists	
Alert your staff to problem, new working practice, interim solutions, etc	

	Designation	**Initial Review Date**	**Review**
Assessor Blair Johnston	Clinical Scientist (MRI Physics)	23/6/20	As per QPulse record
Manager John McLean	Deputy Head of MRI Physics		

5) Staff Information and awareness

Processes for ensuring staff are aware of the COSHH Risk Assessment. Confirm which will apply:

- Induction processes
- Departmental training
- Departmental meetings
- Health and Safety Committee
- Other local processes (please specify):
    - Put onto the QPulse System and MRI Physics website. MRI modality lead radiographers to be informed and to cascade information to all relevant staff.