

COSHH Risk Assessment Form

1) Department: MRI

Ref no:

Substance / Activity

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

- Nickel Chloride solution (product code: 1322 536 50801)
- ECC phantom liquid (product code: 4522 132 38231)
- Phantom liquid 11 (product code: 1322 518 33501)
- Phantom liquid 13 (product code: 1322 521 57701)
- Load phantom liquid (product code: 1322 536 75401)
- Spectrasyn 4 (product code: 1322 536 20101)
CAS Number: 68037-01-4
- Marcol 82, white mineral oil (petroleum) (product code: 1322 527 19701)
CAS Number: 8042-47-5
- Solution sphere A (product code: 4522 131 39281)

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) |
|------------------------------------|---|--|---|
| Nickel Chloride Solution | Toxic in large quantities, irritant and hazardous to the environment, health hazard (allergen, low risk carcinogen and reproductive toxicity) | Liquid | Inhalation, absorption (skin or eye contact) or ingestion |
| ECC phantom liquid | Toxic in large quantities, irritant, hazardous to the environment, flammable and health hazard (suspected of damaging unborn child) | | |
| Phantom liquid 11 | Toxic in large quantities, irritant, hazardous to the environment and health hazard (suspected of | | |
| Phantom liquid 13 | | | |
| Load phantom liquid | | | |

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|-------------------|------------------------|--|--|
| | damaging unborn child) | | |
| Spectrasyn 4 | Toxic | | |
| Marcol 82 | | | |
| Solution sphere A | Flammable | | |

| | |
|---|---|
| Individuals or groups exposed | Radiographers, Healthcare Support Workers, Physicists, Domestic |
| 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

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| 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. |
|---|--|
| <p>Phantom liquid is in a sealed container. Exposure would only occur if container is damaged.</p> <p>Damaged phantoms must not be used.</p> <p>Any spillages to be highlighted to all staff in immediate vicinity until spillage is removed such as to avoid slips and falls</p> <p>Leaking or damaged phantoms will be reported to the manufacturer with a view to obtaining a replacement.</p> <p>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.</p> | <p>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.</p> <p>The appropriate disposal and cleaning protocol was not known or was not followed.</p> <p>Personal protective equipment used during disposal failed.</p> <p>Someone was able to ingest the liquid.</p> |

| Emergency Procedures | |
|--|---|
| <u>First Aid</u> | <u>Spillages</u> |
| Remove contaminated clothing at once. Seek | Avoid skin and eye contact as well as the |

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.

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. Seek medical assistance.

Ingestion: If conscious, rinse mouth with water but DO NOT drink water. Seek medical assistance.

Self-protection of the first aider: Avoid skin contact.

Information to physician:

Nickel Chloride solution may cause damage to organs through prolonged or repeated exposure, may cause cancer by inhalation and the substance has an effect on unborn and breast-fed children.

Phantom liquid 11 and load phantom liquid have an effect on the blood.

ECC phantom liquid may have an effect on an unborn child.

Spectrasyn 4 and Marcol 82 have an effect on the lungs.

Solution sphere A contains ethanol which is classed as a carcinogen and toxic to reproduction substance in the Netherlands.

Contact a poison centre for further advice.

Most important symptoms:

- Inhalation: local atomising prickling/sore throat

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.

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| <p>Nickel Chloride solution and Solution sphere A may cause allergic reaction: risk of asthma. May be absorbed after inhalation</p> <ul style="list-style-type: none">• <u>Skin</u>: local prickling/redness. <p>Nickel Chloride solution may cause allergic reactions: chance of allergic dermatitis. May be absorbed by the skin.</p> <p>Spectrasyn 4 and Marcol 82 have a local degreasing effect (rough, dry skin, eczema) with sustained contact.</p> <ul style="list-style-type: none">• <u>Eyes</u>: local prickling/redness• <u>Ingestion</u>: local prickling/sore throat. May be absorbed after ingestion. <p>Spectrasyn 4 and Marcol 82 have chance of pulmonary affections if choked.</p> | |
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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

| <u>Likelihood</u> | <u>Impact / Consequences</u> | | | | |
|-------------------|------------------------------|--------|------------|--------|---------|
| | 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 | <u>Low</u> | 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 | By Whom | Start date | Action due date |
|---|----------------|-------------------|------------------------|
| List the actions required. If action by others is required, you must send them a copy | | | |

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

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| 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) | 24/6/20 | 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.