## Risk Assessment Form

| | | | |
|---|---|---|---|
| Title of Risk Assessment | risk assessment for NMR instruments of the Solid State NMR National Facility at Warwick | Date of assessment | 23/02/2024 |
| Department | Physics | Date review due | 23/02/2024 |
| Description of Task/Process | General use of NMR NRF instruments at Millburn | | |
| Assessment carried out by | Andrew Howes | | |

| | |
|---|---|
| **Additional information** | • |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| **Oxygen Depletion,**<br>**(due to magnetic quench or nitrogen leak)**<br>Personal injury, death from asphyxiation | All users of space | ▪ training is given in handling compressed gas including shutting off in emergency during induction. oxygen depletion monitoring and alarm. User to check for leaks. | VL | ▪ | ▪ Estates, maintenance of detection system. | VL |
| **Transmission of infectious diseases e.g., COVID-19, gastroenteritis** | user | ▪ Ensure keyboards etc are cleaned<br>▪ Refer to University webpages for current advice on COVID-19<br>▪ All control measures are stated in the University Infectious Diseases risk assessment and must be followed | L | ▪ | | L |
| **Chemical contamination**<br>Exposure to chemical agents due to rotor crash. environmental impact leading to contact, inhalation, or ingestion injuries | All users of space | ▪ Sample volumes are (very) small<br>▪ Report rotor crashes<br>▪ risk assessment and department lab rules in place<br>▪ Hand washing facilities and soap available in G71 | L | ▪ | ▪ | L |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| **Trips, Falls**<br>Pre-amplifier other equipment and cables on floor. Personal injury, | Users | ▪ Users undergo induction and are reminded of hazard. | L | ▪ | ▪ | L |
| **Manual Handling/Ergonomics**<br>Musculoskeletal injuries from inserting/removing probe from magnet. Reaching to load sample using top loading tube. | Users | ▪ Probes and samples not changed often<br>▪ Consider sitting on floor using mat.<br>▪ Position steps correctly, if used.<br>▪ Training. | L | | | L |
| **Manual Handling/Ergonomics – sitting**<br>Musculoskeletal injuries | Users | ▪ Sit "straight on" when working at a desk<br>▪ Individual to alter lab chair – seat height, (foot rest) height, lumbar support, backrest incline<br>▪ Take regular breaks<br>▪ Training | L | | | L |
| **Poor, excessive, or inadequate lighting** | users | ▪ Overhead lighting to be at recommended Lux levels for laboratories as per Chartered Institution of | L | Lighting to be considered prior to conducting the work to identify if further task | User – as and when required | VL |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| Ill health/wellbeing, personal injury, property damage | | Building Services (CIBSE) guidelines<br>▪ Task lighting to be introduced, as required, to reduce shadowing and improve local lighting | | lighting is required or whether the task requires relocation due to inadequate lighting | | |
| **Electricity - Mains power/sockets**<br>Electric shock; tingling and numbness, weakness or difficulty in moving limbs, amnesia, seizures, respiratory arrest, burns, Fire, Loss of power, property damage, fire | users | ▪ Use only approved distribution board if necessary<br>▪ Portable appliance testing<br>▪ Ensure back panel is fitted properly to console<br>▪ Fixed wiring installation is tested at least every 5 years by the University<br>▪ User must not overload circuit<br>▪ Pre-use visual checks carried out by user to ensure socket not damaged prior to use<br>▪ | L | User to report any defective power sockets to the Estates Service desk to ensure that they are taken out of use | User – as and when required | VL |
| **Working at Height**<br>fall, sprains, breakages, unconsciousness. | user | ▪ training for working at height to be provided (moodle or local management)<br>▪ Use handrail on steps to platform. If fitted keep platform gate closed. | VL | | | VL |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| | | ▪ If using step ladder this should be "square on" work. | | | | |
| **Confined Space**<br>cramping of muscles. physically hitting underside of magnet | user | ▪ minimal time under magnet | VL | | | VL |
| **Rotor crash**<br>Flying rotor | All users of space | ▪ rotor is Inside probe and in room temperature bore of magnet | VL | | | VL |
| **Electromagnetic Radiation**<br>Exposure to radio frequency microwaves | All users of space | ▪ radio frequency radiation, probes are within the volume of the magnet - minimal radiated energy<br>▪ Console is shielded<br>▪ training. | L | | | L |
| **Cold burns and asphyxiation**<br>From cryogenic liquids | user | ▪ training is mandatory PPE is used. Induction includes comments on using instruments during cryogen fills. | VL | | | VL |
| **High Stray Magnetic Field** | Anu user of space | ▪ training and initial induction for new users, controlled access to NRF. | L | | | L |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| physically, ferromagnetic material attracted to magnet | | | | | | |
| | | ▪ | | | | |
| | | | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |
| | | ▪ | | | | |

| Hazards and how they may cause harm | Who may be at Risk? | Existing Control Measures | Current Risk Level (VL,L,M,H,VH) | Where current risk is M, H or VH, what additional Control Measures are required? | Action required by whom & by when? | Final Risk Level |
|---|---|---|---|---|---|---|
| | | ▪ | | | | |
| | | ▪ | | | | |

**Work should not be carried out until the assessment is completed and all required control measures are in place.**

| | |
|---|---|
| **Overall Final Risk Rating** (Highest level in final column above) | **Low** |

| | |
|---|---|
| **Additional Comments from Risk Assessor** (e.g. funding or practical implications) | |

| | |
|---|---|
| Approved By | Andrew Howes |
| Date | 23/02/2024 |

| | |
|---|---|
| Position | Associate Professor |

Please print a copy, sign it and keep for your records

**Document History**

| Version | Date | Reviewer | Comments |
|---|---|---|---|

| | | | |
|---|---|---|---|
| V1.0 | 20/02/24 | Andrew Howes | New assessment |
| | | | |
| | | | |

| | Severity | | | | |
|---|---|---|---|---|---|
| **Likelihood** | Superficial | Minor | Serious | Major | Extreme |
| Unlikely | **Very low** | **Very low** | **Low** | **Low** | **Moderate** |
| Possible | **Very low** | **Low** | **Low** | **Moderate** | **High** |
| Likely | **Low** | **Low** | **Moderate** | **High** | **Very high** |
| Very likely | **Low** | **Moderate** | **High** | **Very high** | **Very high** |
| Extremely likely | **Moderate** | **High** | **Very high** | **Very high** | **Very high** |

| Risk Level | |
|---|---|
| **Very low** | Acceptable risk - no action required |
| **Low** | Tolerable risk - further control measures not required, but status must be monitored |
| **Moderate** | Further control measures required to reduce risk as far as is reasonably practical |
| **High** | Urgent action required to allow activity to continue |
| **Very high** | Risk intolerable - activity must cease until the risk has been reduced |

See 'Matrix for risk evaluation' for further guidance.