

GENERAL RISK ASSESSMENT FORM



University of London

1	RISK ASSESSMENT NUMBER	IPS/RES/014(2012)	ISSUE NO.	1
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2	PERSON RESPONSIBLE FOR WORK (e.g. PRINCIPAL INVESTIGATOR)			
	Name: Prof. P. Hylands & Prof. C. Page	Position: Joint Heads of IPS		
	School Biomedical Sciences	Division: IPS		

3	PERSON CONDUCTING THE RISK ASSESSMENT			
	Name: Mr. John Darker / Dr. James Mason	Position Resource Manager & LSO / PI & NMR Manager		
	School: Biomedical Sciences	Date: 21/02//2012		

4	LOCATION OF WORK ACTIVITY			
	Laboratory FWB 5.113/115, Research Corridor 5D, Waterloo Campus.			

5	ACTIVITY DESCRIPTION			
	<p>Nuclear Magnetic Resonance Spectroscopy Laboratory.</p> <ol style="list-style-type: none"> 1. Controlled access procedures to ensure safety of all entering laboratory. 2. Analysis of solutions using an open access Bruker 400 MHz NMR spectrometer by users. 3. The maintenance of the instrument by trained NMR support staff. 			

6	AT RISK GROUPS		
	Type	Y/N	Describe additional precautions required (if any)
	Personnel with cardiac pacemakers and/or metallic implants.	Y	Personnel with cardiac pacemakers and or metallic implants are not permitted to enter lab 5.113/115.
	Maintenance workers, including eTDe staff and contractors.	Y	Access to FWB Research Corridor 5D is restricted and is only granted after hazards, control measures and emergency procedures have been explained.
	Non open access NMR user occupants of or visitors to lab 5.113/115.	Y	Access to FWB Research Corridor 5D is restricted and is only granted after hazards, control measures and emergency procedures have been explained.
	Open access NMR users	Y	Training provided.
	NMR support staff	Y	Training provided.
	Young persons	N	

7 HAZARDS			
	Present Y/N	Describe hazard or state whether a Specific Risk Assessment supplement is used (and attach)	Adequately controlled Y/N (refer to controls section 8B below)
Biological	N		
Chemical	Y	Various chemicals and solvents, hazard(s) dependent on identity.	Y
Magnetic Field		Working in close proximity to a large magnetic field. The operation of cardiac pacemakers may be affected by the stray magnetic field. Close to the magnet the stray field represents a danger to the lives of people fitted with pacemakers. There is also a possibility of harmful effects to people fitted with ferromagnetic implants, which may include surgical clips, particularly aneurism clips. The stray field around the magnet also gives rise to attractive forces between the NMR magnet and ferromagnetic objects brought into the magnet room. These forces may become large enough to move objects uncontrollably towards the magnet.	Y
Use of Cryogenic liquids	Y	Maintenance of cryogenes (liquid helium and liquid nitrogen). Sudden release of helium following a magnet quench i.e. loss of superconducting conditions in the magnet wiring, displacing the air in the room.	Y
Electrical	Y	Maintenance of the NMR with a 16 A electrical supply. High voltages and high power radiofrequency (RF) within equipment. Operation and maintenance of an associated compressor.	Y
Physical	Y	Trailing cables connecting various parts. The control console, computer and NMR spectrometers are interconnected with cables, which for practical reasons run	Y

		over the floor. There is a small risk of tripping over these when moving around the instrument.	
Ergonomic)	Y	1. Loading & retrieval of NMR samples. 2. Noise levels from compressor.	Y

8	CONTROL MEASURES		
8A	HIERACHY OF CONTROL		
Type	Used Y/N	Justification	
Elimination	N	No alternative available.	
Substitution	N	No alternative available.	
Engineering (local exhaust ventilation etc.)	Y	Preventative maintenance program in place	
Behavioural/Administrative (SSW etc)	Y	Training provided on use of instrument. Restricted access in place. Management of liquid helium and liquid nitrogen levels.	
Personal Protective Equipment	Y	Use of safety glasses, lab coat and gloves as required when handling hazardous chemicals. Use of cryogenic gloves when handling liquid helium and liquid nitrogen.	
8B	CONTROLS IDENTIFIED		
Type (for each hazard identified at 7 above a related control should be listed here)	In place Y/N	Comments	
<u>Chemical</u> : use of safety glasses, lab coat and gloves as required when handling hazardous chemicals.	Y	Work will be additionally covered under a separate Risk Assessment.	
<u>Magnetic Field</u> . access to an area of magnetic flux density above 5 Gauss by anyone other than appropriately qualified trained personnel is not permitted. Physical barriers present to restrict access into the 5 G Zone. Appropriate warning signs present at the three access controls - corridor, laboratory, 5 Gauss Zone. Undergraduates will not be permitted to enter the 5 G Zone. All users to minimise time spent in 5 G Zone. Removal of all ferromagnetic objects from users before entering the 5 G Zone, e.g. steel toe caps, tool belts, jewellery, buckles, pens, keys. Also at risk of damage: bank & swipe cards, hand held communication and electronic devices. No access to lab 5.113/115 for those with pacemakers or metallic implants. Swipe card	Y		

<p>access to corridor 5D granted by authorised signatory only and only after hazards, control measures and emergency procedures have been explained.</p> <p>Large gas cylinders sited in the laboratory should be securely strapped to a wall (preferentially) or a bench. Small, ferromagnetic items such as screwdrivers must not be left lying around close to the magnet.</p>		
<p><u>Use of Cryogenic liquids:</u></p> <p>Weekly liquid N₂ fills to be carried out by trained NMR staff according to SOP for handling cryogens.</p> <p>Six monthly liquid He fills to be carried out by Bruker engineer. Lab occupants alerted during this procedure.</p> <p>Low oxygen monitors are installed to detect any increase in gaseous nitrogen and/or helium levels.</p> <p>Lab has adequate ventilation in the event of a magnet quench (see comments). IPS NMR Emergency Procedures includes procedure for a magnet quench, An IPS Nmr Emergency Team is in place.</p>	Y	<p>Under normal operating conditions, the risk of a magnet quench is very low. If this does occur, there will be a sudden, noisy, escape of helium gas. As this is lighter than air it will rise to the ceiling and the oxygen monitors will alarm. The emergency procedure should be followed in the event of a quench. Also note that the low oxygen alarm may be activated without a quench, either by poor working practices in the lab or malfunction.</p>
<p><u>Electrical:</u> Any person carrying out maintenance or repair of the spectrometer must have been suitably trained.</p> <p>Only NMR support staff will maintain the compressor. The compressor is inspected annually by Sun Alliance (College Insurers) according to a written scheme of work under the annual pressure vessel testing regime.</p>	Y	<p>There is no risk from high voltage or RF under normal operating procedures.</p>
<p><u>Physical:</u> access around the magnet, where cabling is most likely to trail across floors, is restricted. Whenever possible, trailing cables are to be covered.</p>	Y	
<p><u>Ergonomic:</u></p> <p>the compressor is insulated to reduce noise levels to 50 dBA and housed separately in room 5.111.</p> <p>A (non-magnetic) step ladder will be provided to access the magnet for maintenance or to add / remove samples from the carousel.</p>	Y	

9	INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION (DESCRIBE COURSES AND/OR SPECIAL ARRANGEMENTS REQUIREMENTS)

10	MONITORING	
Type	Required Y/N	Describe (include results of any monitoring carried out)
Maintenance	Y	Preventative maintenance programs in place for equipment as described above.
Environmental monitoring	N	
Self inspection/reporting	N	
Health Surveillance	N	

11	EMERGENCY PROCEDURES	
Type	Describe	
Spillages	All breakages and spillages to be handled according to standard lab procedures and/or risk assessment in place for that work. NMR manager to be notified	
First aid	In the event of a person fitted with a cardiac pacemaker or other medical device being adversely affected by the stray magnetic field, the person should be immediately moved to an area of low stray field (< 5 G) and immediate medical assistance obtained.	
Magnet quench	In the event of a magnet quench or if the oxygen alarm sounds, lab 5.113/115 and adjacent lab 5.118 should be immediately evacuated and FWB Security contacted (ext. 3806 or 3807 or by calling the emergency number 2222). Security need to be informed that the NMR Emergency Team should be contacted. No re-entry should be attempted until the alarm stops (automatic when oxygen returns to a safe level).	
Flood	In the event of a laboratory flood affecting the NMR Zone, FWB Security should be contacted (ext. 3806 or 3807 or by calling the emergency number 2222). Security need to be informed that the NMR Emergency Team should be contacted. The electrical supply may need to be isolated and the flood addressed without entry into the 5 G zone. If	

	entering the 5 G Zone remove all ferromagnetic items e.g. keys, belt buckles, jeweler, steel toe caps, tool belts, swipe and credit cards.
Fire	In the event of a fire, the Fire Brigade will need to be advised to avoid entering the 5 G zone.

12 PROCESS RISK ASSESSMENT																																								
Overall risk rating (select one rating)	<table border="1"> <tr> <th colspan="6">RISK ASSESSMENT MATRIX</th> </tr> <tr> <th rowspan="4">SEVERITY</th> <td>Fatality</td> <td>Medium</td> <td>High</td> <td>High</td> <td>Unacceptable</td> </tr> <tr> <td>RIDDOR</td> <td>Medium</td> <td>Medium</td> <td>High</td> <td>High</td> </tr> <tr> <td>Moderate Injury</td> <td>Low</td> <td>Low</td> <td>Med</td> <td>Medium</td> </tr> <tr> <td>Minor Injury</td> <td>Insignificant</td> <td>Low</td> <td>Low</td> <td>Low</td> </tr> <tr> <td></td> <td>Unlikely</td> <td>Possible</td> <td>Probable</td> <td>Certain</td> <td></td> </tr> <tr> <td></td> <td colspan="5" style="text-align: center;">LIKELIHOOD</td> </tr> </table>	RISK ASSESSMENT MATRIX						SEVERITY	Fatality	Medium	High	High	Unacceptable	RIDDOR	Medium	Medium	High	High	Moderate Injury	Low	Low	Med	Medium	Minor Injury	Insignificant	Low	Low	Low		Unlikely	Possible	Probable	Certain			LIKELIHOOD				
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Justification for rating (describe reasoning for risk rating)	The risk is reduced by the need for all users to be granted swipe card access to corridor 5D by an authorised signatory. Access is not granted until NMR Health and Safety Induction has been completed comprising the communication of hazards, control measures and emergency procedures for enginners, lab visitors and NMR users. Any breach of H&S procedures can result in cancellation of access.																																							

13 RECOMMENDATIONS FOR FURTHER ACTION		
Recommendation	Who by	When

14 ASSESSMENT REVIEW						
Review	Date	Assessor name (PRINT)	Assessor (signature)	Outcome of review Change/No Change	Managers name (PRINT)	Managers acceptance (Signature)
1						
2						
3						

**Guidance for completion of
GENERAL RISK ASSESSMENT FORM**



University of London

1. **RISK ASSESSMENT NUMBER**
This is a unique number to aid identification for amend purposes etc. System used is based on School/Directorate and 3 digit sequential number and year, e.g. MED/001(2009)_is School of Medicine, Risk assessment form, 001. Refer to Safety Procedure SPR025-01-HSEPO. Alternatively if managed at department/ division level HR/HSEPO/001(2009)
2. **PERSON RESPONSIBLE FOR WORK**
The Head of Department or Principal Investigator is directly responsible for ensuring work involving hazardous substances are suitably risk assessed before work commences.
3. **PERSON CONDUCTING THE RISK ASSESSMENT**
This is the trained risk assessor.
4. **LOCATION OF WORK ACTIVITY**
The location of an activity can significantly alter the risk. Different levels of risk may arise from the same activity performed in different locations if there is also a difference in the standards of facilities of the location. State all locations where the activity(ies) will be conducted.
5. **ACTIVITY DESCRIPTION**
A brief description of process being undertaken should be included here.
6. **AT RISK GROUPS**
In some cases named individuals may be indicated in this section. In other cases it will be more appropriate to refer to groups of people such as cleaning staff etc. Identification of groups particularly at risk who may require additional safe guards is particularly important.
7. **HAZARDS**
It is extremely unlikely that a process will only involve a chemical related hazard, use of equipment, such as hot plates, evaporators etc will bring with it additional hazards. Other hazards such as biological agents may also be present. The assessment of risk in the process must take into account all the types of hazard.
8. **CONTROL MEASURES**
It is important that the hierarchy of control is followed. An assessment must be made as to why a higher level of control, e.g. substitution, cannot be used in this particular process.

Once determined all control methods, e.g. use of enclosed equipment, fume cupboards, safe system of work, personal protective equipment (PPE) etc must be detailed. Where appropriate, specify class of equipment, type of material and level of performance (particularly relevant for selecting suitable PPE).
9. **INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION**
It is important to describe the level of competence expected and the identification of any special training or supervisory requirements.

10. **MONITORING**

Some equipment, e.g. fume cupboards require user checks and statutory testing. To ensure environmental standards, e.g. Workplace Exposure Limits (WEL) are not exceeded, monitoring may be carried out at specified intervals. Working with some substances, e.g. respiratory sensitizers, will require regular health surveillance programs to be introduced.

11. **EMERGENCY PROCEDURES**

The details given here must be compatible with your Schools emergency plan. The appropriate persons must be notified and suitably trained.

12. **PROCESS RISK ASSESSMENT**

Based on all the information gathered in sections 2-14 of the General risk assessment form, including any supplementary sheets, an assessment of risk and brief justification for rating should be made using the matrix below.

RISK ASSESSMENT MATRIX					
SEVERITY	Fatality	Medium	High	High	Unacceptable
	RIDDOR	Medium	Medium	High	High
	Moderate Injury	Low	Low	Med	Medium
	Minor Injury	Insignificant	Low	Low	Low
		Unlikely	Possible	Probable	Certain
LIKELIHOOD					

Please note: The assessment should be based on conditions at time of assessment and not based upon the “ideal” controlled environment. There is nothing wrong in assessing a particular process “high” or “medium” risk. A process should not be assessed “low” or “insignificant” risk unless that is truly the assessment.

13. **RECOMMENDATIONS**

All high risks and most medium risks should have recommendations made to attempt to lower the risk rating where possible (although not possible in all instances).

Recommendations should be entered here and assigned to a person with a completion date. Upon completion of the action a review of the assessment should be undertaken.

17. **ASSESSMENT REVIEW**

Assessments should be regularly reviewed and if significant changes occur, e.g. after an accident or legislative requirements alter, a review must be undertaken. If no significant changes occur all assessments should be reviewed no longer than 3 years after initial assessment or previous review.

Where a change is indicated, the assessment should be rewritten to include the changes