The University of Sheffield

Risk Assessment Form

PERSONS AT RISK : (*) Employees (*) Contractors ( ) Public ( ) Visitors ( ) Others			**Reference No:**	
Risk: (H) High (M) Medium (L) Low (O) No Risk.			**Environment: Underground chamber with multi-landing stair access / egress**	
TASK or ACTIVITY: Operation & maintenance of NMR Spectrometers operating at, or greater than, 800 MHz		**INITIAL RISK**		**FINAL RISK**
SIGNIFICANT HAZARD	**RISK**	**RATING**	**EXISTING CONTROL/PROPOSED CONTROL MEASURES**	**RATING**
Accidental release of significant	Asphyxiation	H	1. High & low level oxygen deficiency sensing equipment in chamber .	]
volumes of liquid or gaseous			2. Min. 4 Air Changes per Hour in chamber & high volume emergency ventilatic	]
cryogen (Helium or Nitrogen)			triggered by low oxygen alarm (min 10 ACH)	]
			3. Access restricted to 2 Emergency BA trained & authorised staff at any time.	] L
			4. Emergency procedure for action in event of gas alarm implemented.	]
			5. BA to be checked daily for proper operation & worn at all times in chamber	]
			6. See "Comments" below for additional preventative measures.	]
Power failure	Release of cryogenic substances / gases	M	1. Battery backup (UPS) for NMR installed - 2 hours.	] L
			2. Gas fueled generator installed for standby power, manual startup.	]
Contact with liquid cryogen	Cold burns to exposed skin	M	1. All operators must wear PPE as stated below (Comments Point 2).	]
during refilling sequence			2. Refilling operations must accord with Safe Operating Procedure	] L
			3. All operators to be trained in all relevant Safe Operating Procedures	]
Strong magnetic field	Injury from moving ferromagnetic objects	M	1. All operators and visitors required to remove all ferromagnetic objects	]
	Pacemaker failure		prior to entry to laboratory.	] L
			2. Warning signs posted on access door to laboratory	]
Broken NMR tubes	Cuts to fingers / contamination by sample	L	1. Handle carefully / Avoid excessive force / Do not use chipped NMR tubes	L
Comments: 1. NMR Helium levels checked at least once per week for rate of loss and as an indication of deviations from normal losses.			**Overall Risk:**	**L**
2. PPE requirements as stated in risk assessment "Use of Inert Cryogens in laboratories and storage areas" + Emergency BA set per entrant to chaamber				
3. Oxygen deficiency sensing equipment, tested for correct operation monthly, calibrated 6 monthly to 19% oxygen concentration & new sensor installed every 12-18 months				
4. Contractor access to, and work in, NMR areas to be constantly supervised. Contractors to be made aware of risks in NMR areas.				
Additional References, Tasks etc				
Safe Operating Procedures for Refilling NMR unit with Liquid Helium and Liquid Nitrogen				
Risk Assessment "Use of Inert Cryogens in laboratories and storage areas"				
Undertaken By:				
Other Persons Consulted:				
Date:			**Revision Date:**	