



This form is to be used in conjunction with the Environment Health and Safety Manual Procedure 3.2 Hazard Identification, Assessment and Control - Application.

Information of Activity

Activity: High vacuum equipment usage Location: Chemistry

Identified by: G. Papadopoulos Date: 31/1/06

Identified Hazard / Aspect: Possible implosion of glassware

Risk Analysis matrix – level of risk

Identified Hazards	Risk Assessment			Risk Score	Risk Level
	Exposure (E)	Likelihood (L)	Consequence (C)	E x L x C	
Implosion of glassware	6	0.3	5	9	M
Chemical exposure due to breakage	6	0.3	5	9	M
Cryogenic burns	3	0.3	5	4.5	M

Definitions						
Exposure	E	Likelihood	L	Consequence	C	Risk Score
Continuously	10	Almost Certain	1.0	Catastrophic	20	E >20 H >10 M 3-10
Frequently	6	Likely	0.6	Major	10	Hierarchy of Risk Controls Elimination is a permanent solution and should be attempted in the first instance. Substitution involves replacing the hazard or environmental aspect by one of lower risk. Engineering controls involve physical barriers or structural changes to the environment or process. Administrative controls reduce hazard by altering procedures and providing instructions. Personal protective equipment last resort or temporary control.
Occasionally	3	Possible	0.3	Moderate	5	
Infrequently	2	Unlikely	0.1	Minor	2	
Rarely	1	Rare	0.05	Insignificant	1	
						L < 3

LEGEND

E: extreme/significant risk; immediate action required; must be managed by senior management with a detailed plan, notify RMO immediately.

H: high risk, senior management attention needed, detailed research and management planning at senior levels

M: moderate risk, management responsibility must be specified; manage by specific monitoring or response procedures

L: low risk, manage by routine procedures; unlikely to need specific allocation of resources

Details of Risk Controls to be Taken

Risk Controls: (These should be determined by both the person(s) identifying the risk and the responsible manager and HSR or Environmental Representative). When determining risk controls refer to Hierarchy of Risk Control. Some examples are operating manuals, safe work procedures, licenses, permits to work, training and instruction etc

- Lab coat and glasses to be worn at all times. When using liquid nitrogen to trap vapors, appropriate gloves and face shield also required.
- Only suitable glassware should be used eg. only round bottom flasks to be used on rotary evaporators. Glassware should be periodically checked and be free from chips, cracks or flaws that would make it unsafe to use. Particular care should be taken to spot any star cracks.
- Volumes of 1 litre or larger must be enclosed in tape or plastic mesh to restrain fragments in case of implosion. This will normally apply to rotary evaporators, vacuum desiccators and storage bulbs on glass lines. Schlenk lines and tubes are generally of small volume and are quite robust in nature, so they do not require extra protection in the shape of tape or plastic mesh. Grease all taps and joints for smooth operation.



THE UNIVERSITY OF
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RISK ASSESSMENT 3D Model

EHS Manual

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Person assessing the risk: G. Papadopoulos Date: 31/1/06

Authorised by: G. Papadopoulos Planned completion date: 31/1/06

Risk Control Measures Completed

Actions by: G. Papadopoulos Completed (Initials & date): 31/1/06