

RISK ASSESSMENT FOR GRADIFLOW MF10 (prototype)

Date: 15/09/2005	School/Dept: Bioanalytical Mass Spectrometry Facility	Assessment completed by:	Contact No.:
What is the task: Electrophoretic fractionation of proteins		Location where task is being conducted: BMSF, Rm M312	
<p>Briefly explain the procedure for this task: Refer to SOP for Gradiflow MF10</p> <p>This task involves fractionating proteins under an electric current. It requires a membrane cartridge that needs to be inserted into the Gradiflow MF10 instrument. These membrane cartridges may have to be assembled if pre-packed ones are not available. Buffers and a protein sample are then added to the instrument and then an electric current is applied for fractionation of proteins from one stream 1 (upstream) to stream 2 (downstream). To the instrument cool and prevent the sample from heating up ice is needed to lower the temperature during separation.</p>			

Steps in Process	Hazards in carrying out this step	Risk (Harm)	Existing Controls	Risk Rating with existing controls? (see next page)			Additional controls required	Risk Rating with additional controls?		
				Consequences	Likelihood	Rating		Consequences	Likelihood	Rating
List major steps or tasks in process eg <ul style="list-style-type: none"> • Blood collection • Centrifugation • Loading truck • Stacking shelf 	<ul style="list-style-type: none"> • Noise • Dust/fumes/ Vapours etc. • Heat/cold • Electrical • Moving Parts 	<ul style="list-style-type: none"> • Electric shock • Eye infection • Fire / explosion • Physical injury • Cut / graze • Chemical burn 	List all current controls that are already in place or that will be used to undertake the task eg <ul style="list-style-type: none"> • List of Personal Protective Equipment (PPE) • Identify types facility, location • Existing safety measurers • Existing emergency procedures 	3	C	H	Additional controls may be required to reduce risk rating eg <ul style="list-style-type: none"> • Greater containment (PC2) • Additional PPE – gloves safety glasses • Specific induction / training 	2	C	M
Making the buffers	Chemical spills	<ul style="list-style-type: none"> • Eye infection • Skin irritation • Chemical burns • Respiratory irritation 	<ul style="list-style-type: none"> • PPE: laboratory coat, gloves and safety glasses • Eye wash stations • First Aid Kit 	3	C	H	<ul style="list-style-type: none"> • PPE: face mask, closed shoes • MSDS required for all chemicals used • Spill kit • Hazardous Substance Training 	2	C	M

Assembling the cartridge	Chemical exposure to 0.05% v/v sodium azide in MES-BISTRIS	<ul style="list-style-type: none"> Toxic if swallowed May cause skin and eye irritation May be fatal if absorbed through skin or if inhaled 	<ul style="list-style-type: none"> PPE: laboratory coat, gloves and safety glasses Eye wash stations First Aid Kit 	3	D	M	<ul style="list-style-type: none"> Read MSDS PPE: closed shoes 	2	D	L
Inserting/ removing the cartridge from the instrument	Chemical exposure due to buffer spills Electrical	<ul style="list-style-type: none"> Eye infection Skin irritation Chemical burns Respiratory irritation Electric hazard from the power supply pack 	<ul style="list-style-type: none"> PPE: laboratory coat, gloves and safety glasses Eye wash stations First Aid Kit Turn OFF all pumps before inserting/ removing cartridge 	3	C	H	<ul style="list-style-type: none"> Read the SOP THOROUGHLY Read MSDS Spill kit PPE: closed shoes Elevate the power supply pack in case of liquid spill 	2	C	M
Turning on the buffer pumps	Electrical	<ul style="list-style-type: none"> Electric shock Electric- fire 	<ul style="list-style-type: none"> Ensure the separation unit is secure- no leaks Power outlet/board located above off bench to avoid any liquid spills Equipment tested and tagged Fire Extinguisher Fire Warden 	3	E	M	<ul style="list-style-type: none"> Regular maintenance check of main power board Visual check of the instrument and around the power supply before beginning experiment 	2	E	L

Applying the voltage for protein fractionation	Electrical	<ul style="list-style-type: none"> • Electric hazard from the power supply pack • Burning of the membrane cartridge- fire hazard 	<ul style="list-style-type: none"> • Make sure all buffers/sample are circulating properly throughout the instrument before applying the voltage • Fire Extinguisher • Fire Warden • First Aid Kit 	3	E	M	<ul style="list-style-type: none"> • Read the SOP THOROUGHLY • Power pack tested and tagged • Visual check of the power supply pack before beginning experiment 	2	E	L
Cleaning the Gradiflow MF10	Chemical exposure to 70% ethanol	<ul style="list-style-type: none"> • Eye irritation • Skin irritation. Can be absorbed through the skin • May be fatal if swallowed • May cause respiratory irritation if high concentrations are inhaled • Flammable 	<ul style="list-style-type: none"> • PPE: laboratory coat, gloves and safety glasses • Eye wash stations • First Aid Kit 	3	D	M	<ul style="list-style-type: none"> • MSDS • Spill kit • PPE: closed shoes 	2	D	L

Is there a requirement for safe storage?

- All separation membranes should be stored in zip-lock plastic bags at 4°C
- Any organic solvents are stored in the flammable solvents cabinets in room M305

How is access prevented except to authorised persons? N/A

In the event of an emergency:

- Inform supervisor and first aid officer/fire warden
- For large scale emergencies dial x56666
- An eye wash station is located above the sink besides the Gradiflow BF200 (M312). There are other eye wash stations in room M304
- First Aid Kit in room M310
- Safety shower in room M307
- Hose reel and CO₂ fire extinguisher just outside M305
- Fire extinguishers: CO₂ in rooms M305 and M307; Dry Chemical extinguisher is located beside the electrical cupboard and store room

Other action required to ensure the safety of persons involved, equipment, environment, members of the public
N/A

The task should proceed if the risk rating after the controls are implemented is still either HIGH or EXTREME

Supervisor or designated officer

Sign off: _____ Date: _____

Name: _____ Contact No.: _____