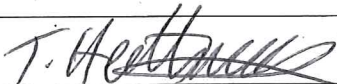



Risk Assessment Record

Department	Centre for Biological Engineering		
Item Description	BD FACS Jazz Cell Sorter		
Location	H34 - Analytical Laboratory		
Date	02/08/2013		
Highest Risk Rating	Medium Risk		
Review Date	<i>16/08/2014</i>		
Assessor	Thomas Heathman		
Comments			
Signature		Date	<i>21/8/13</i>
Supervisor			
Comments			
Signature		Date	
Safety Officer	R.I. Temple		
Comments	There are three class 3B lasers in the system used in the equipment (class 1 system) refer to SOP for maintenance procedures		
Signature		Date	<i>16/08/2013</i>

Personnel at Risk

The Health & Safety at Work Act requires that you ensure, so far as is reasonably practicable, the health and safety of yourself and others who may be affected by what you do or fail to do. Indicate using the groups listed below the individuals (restricted high-risk users) and numbers of people (e.g. with restricted user privileges or unrestricted access) who may be at risk from the hazards. Classify the *maximum* level of activity/exposure to the equipment to be permitted for each group/individual using the categories indicated below.

Activity/Exposure Categories

- | | |
|------------------------------------|-------------------------------|
| 1. Reconfiguration (high exposure) | 5. Supervised reconfiguration |
| 2. Maintenance | 6. Supervised normal use |
| 3. Normal use | 7. Supervised observation |
| 4. Unsupervised observation | 8. Prohibited (no exposure) |

Personnel Groups

	Group	Individuals/Numbers	Activity/Exposure
<input type="checkbox"/>	Academic Staff	All authorised CBE laboratory personnel	Normal use
<input type="checkbox"/>			
<input type="checkbox"/>	Technical Staff	All authorised CBE laboratory personnel	Normal use
<input type="checkbox"/>			
<input type="checkbox"/>	Research Staff	All authorised CBE laboratory personnel	Normal use
<input type="checkbox"/>			
<input type="checkbox"/>	Project Students	All authorised CBE laboratory personnel	Supervised normal use
<input type="checkbox"/>			
	Others	BD Maintenance Engineer	Maintenance

Hazard Checklist

Indicate below whether or not a hazard is present for *each* type listed.

Category 1: Machinery & Work Equipment: Mechanical Hazards

Type	Yes	No
Crushing.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Shearing.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cutting/severing.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Entanglement.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Drawing-in/Trapping.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Impact.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stabbing/puncture.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Friction/abrasion.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other mechanical hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 1: Machinery & Work Equipment: Electrical Hazards

Type	Yes	No
Direct contact.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Indirect contact.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Electrostatic phenomena.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Short circuit/overload.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Source of ignition.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electrical test labels current.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other electrical hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 2: Workplace

Type	Yes	No
Slips/trips/falls on a level.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Falls from a height.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Falling/moving objects/materials.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Striking objects.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Localised hot surfaces.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Localised cold surfaces.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Storage and stacking.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Confined work area (knocks).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Confined space/lack of oxygen.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other workplace hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 3: Hazardous Substances

Type	Yes	No
Toxic fluids.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Toxic gas/mist/fumes/dust.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Flammable liquids.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flammable gas/mist/fumes/dust.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High pressure gas/fluid.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High pressure fluid injection.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Corrosive substances.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Irritants/sensitising substances.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Oxidising substances.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Explosive substances.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Biological substances (infection).....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other substance hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 4: Work Activity

Type	Yes	No
Highly repetitive actions.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stressful posture.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Awkward/heavy lifting/handling.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mental overload/stress.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Visual fatigue (e.g. >3 hours VDU)...	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Poor workplace design.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Use of hand tools.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other work activity hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Risk Assessment Record

Assessment No. [SAF/CBE/...84..__]

Category 5: Work Organisation

Type	Yes	No
Contractors/service.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Type	Yes	No
Other work organisation hazard(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 6: Work Environment

Type	Yes	No
Significant noise.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Significant vibration.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Poor/excessive lighting.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Hot/cold ambient temperature.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Poor ventilation.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other work environment hazard(s)....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 7: Other Hazard Types

Type	Yes	No
Violence.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stress.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Drugs.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Substance abuse.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Category 8: Outdoor Work

Type	Yes	No
Outdoors on campus.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Outdoors off campus.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Overseas fieldwork.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Site visit: construction.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site visit: non-construction.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Other Hazards: Radiation

Type	Yes	No
Radiation: Lasers.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiation: Electromagnetic effects ...	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type	Yes	No
Radiation: Ionising/non-ionising.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other radiation hazard(s).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Hazard Assessment

Describe the hazards identified above on the following pages. For each hazard assess the risk to health and safety using the risk rating formula and categories indicated below.

Risk Calculation

Severity	×	Probability	=	Risk
Major = 3 (e.g. death, major injury as per RIDDOR, irreversible health damage)		High = 3 (where certain or near certain harm will occur)		High = 6,9
Serious = 2 (e.g. injuries causing >3 days absence or reversible health damage)		Medium = 2 (where harm will frequently occur)		Medium = 2,3,4
Minor = 1 (e.g. first aid treatments and other lost time)		Low = 1 (where harm will seldom occur)		Low = 1

Risk Assessment Record

Assessment No. [SAF/CBE/...84...]

Hazard Risk Rating

Activity	Groups at risk	Hazard Description	Controls in place	Severity	Probability	Risk	Action needed? Yes No
Normal use	Research Staff	The BD FACS Jazz contains 3 Lasers which are categorised as Class 1 under normal use.	The Lasers cannot be operated with the shutter open and are not directed toward the user. All users will receive detailed training.	Serious	Low	Medium	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Maintenance	BD Engineer	When maintenance is performed on the BD FACS Jazz the lasers are exposed as panels are removed which presents a hazard.	BD Engineer will have appropriate training to perform maintenance. SOP describes maintenance procedure, in short: 1. No lab users are allowed into H34 when the lasers are exposed. 2. Windows to the corridor will be blacked out during this time.	Serious	Low	Medium	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Normal use	Research Staff	The deflection plates are electrically charged to enable cell sorting.	The deflection plates cannot be on when the protective screen is open and training will be provided to warn user not to touch the plates directly after a sort.	Minor	Low	Low	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Add Row Delete Row

Risk Reduction

Physical

Determine whether the risk to health and safety can be reduced by modifications to the equipment or workspace, especially for those hazards identified as having medium to high risk. List planned action and completion dates below.

Hazard	Action to be taken	Responsible Personnel	Completion Date
Electrical Hazard	The system must be PAT tested in accordance with CBE procedure	Thomas Heathman	7/8/2013
Electrical trunking to the upper level of the CBE is not secure	Seal the electrical trunking at the upper level of the CBE.	Thomas Heathman	
Tripping hazard caused by pulling sheath and waste tanks in & out from below FACS Jazz.	Place the tanks on a movable platform to make them easier to fill and empty and avoid tripping and potential damage.	Thomas Heathman	
Contamination risk with having server unit directly on the floor.	Place server unit on an elevated platform so that the floor below can be easily cleaned.	Thomas Heathman	

Add Row	Delete Row
---------	------------

Risk Assessment Record

Assessment No. [SAF/CBE/...84..__]

Procedural

Determine and indicate below whether acceptable levels of risk to health and safety can only be achieved when equipment use must follow prescribed procedures, and/or where use must be restricted to specified personnel. Prepare and attach user guides, user restriction and other HSE documents as appropriate. Contact the Department Safety Officer for guidance/assistance as necessary.

Item	Yes	No
Does the equipment/process need an operating procedure document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, has one been prepared and appended to this form?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Must protective equipment be worn to use the equipment/process safely? (cf. Personal Protective Equipment (PPE) regulations)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, have the users been adequately notified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, is suitable protective equipment available for all potential users/observers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Should the use of this equipment be restricted to certain qualified personnel?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• If yes, has a list of permitted users been prepared, appended to this form and displayed near the equipment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is training required to use the equipment/process safely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, have all identified users been adequately trained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does the equipment have a CE mark?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If not, does the equipment need a separate Machinery Risk Assessment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• If yes, has one been prepared and appended to this form?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If a lifting hazard has been identified is a manual handling assessment required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• If yes, has one been prepared and appended to this form?	<input type="checkbox"/>	<input type="checkbox"/>
If hazardous substances will be in use, is a COSHH form required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, has one been prepared and appended to this form?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the equipment involve the use of lasers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If yes, has a laser description form been completed and appended to this form?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

