

Risk Assessment for task or process

Date: 1 August 2005	School / Dept: SoMS	Assessment completed by: Amanda O'Connell / Trevor Lewis	Contact No.: x51057 , x52574
What is the task? The loading, unloading, operation and care of the Beckman Avanti J-25 Centrifuge		Location where task is being conducted: Room 310	
<p>Briefly explain the procedure for this task (incl. Ref to other procedures)</p> <p>The Beckman Avanti J-25 centrifuge is a free-standing high-speed centrifuge. This procedure involves the loading the centrifuge with the appropriate rotor and then selecting the appropriate rotor ID on the centrifuge. After this samples are loaded in such a way that the rotor is balanced with capped tubes of the same weight/volume. The centrifuge is then run at the desired speed and time and once finished the samples are unloaded and so is the rotor. The rotor is then placed upside down in the cupboard to dry and the centrifuge turned off and the lid left ajar (to prevent bacterial and condensation build up).</p>			

Step in Process	Hazards in carrying out this step eg.	Risk (Harm) eg	EXISTING CONTROLS	Risk Rating with existing controls? <i>See next page</i>			ADDITIONAL CONTROLS REQUIRED	Risk Rating with additional controls?		
				consequences	Likelihood	rating		consequences	likelihood	rating
List major steps or tasks in process eg – Blood collection – Centrifugation – Loading truck – Stacking shelf	– Noise – Dust/fumes/Vapours etc. – Heat/cold – Electrical – Moving Parts	– 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 – List of Personal Protective Equipment (PPE) – Identify types facility, location – Existing safety measures – Existing emergency procedures	2	E	L	Additional controls may be required to reduce risk rating eg – Greater containment (PC2) – Additional PPE – gloves safety glasses – Specific induction / training			
1. Turning on the power to the centrifuge.	1a. Electrical	1a. Risk of electrocution, resulting in death or serious injury.	1a. All equipment in SoMS is annually inspected for the integrity of the electrical power connections. The centrifuge should have a current testing tag indicating it is safe to use. Perform a brief inspection to ensure that there is no damage to the electrical connection.	2	E	L				
2. Selecting and fitting a rotor	2a. Lifting Hazard/manual handling of rotor.	2a. Muscle strains/neck/shoulder injury from incorrect lifting. Uncontrolled falling object/rotor if not handled properly.	2a. Training in the manual lifting and handling of the rotors. Store the rotors as a convenient height for lifting and handling (i.e. never high on shelves).	2	D	L				

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	2b. Obstructions in front of the centrifuge	2b. Obstructions may cause you to over-reach with the heavy rotor when retrieving or positioning the rotor. Obstructions may be a trip hazard, causing a fall.	2d. Ensure clear and unobstructed access to the centrifuge for ease of loading/unloading.	2	E	L				
3. Loading Samples	3a. Splashes and spills from samples.	3a. Inhalation of aerosols, exposure to contents of samples	3a. Ensure that the centrifuge tubes are properly sealed before loading them into the rotor. Eye protection must be worn. Other personal protective equipment must be worn according to the chemical hazards of the sample being handled (refer to risk assessment for that particular sample).	2	D	L				
	3b. Failure of centrifuge tubes from chemical incompatibility.	3b. Inhalation of aerosols, exposure to contents of samples on skin, splashes to eyes.	3b. Select an appropriate centrifuge tube made from a material that is compatible with the chemical nature of the sample being centrifuged. Refer to the Beckman Avanti J-25 operating manual. Eye protection must be worn. Other personal protective equipment must be worn according to the chemical hazards of the sample being handled (refer to risk assessment for that particular sample).	2	D	L				
4. Running the centrifuge	4a. Mechanical failure of rotating parts due to overloading.	4a. Risk of the rotor shattering causing catastrophic failure of the centrifuge and/or serious injury or death.	4a. Ensure that you select the appropriate speed for the rotor. Do not exceed the maximum speed for the rotor. The Beckman Avanti J-25 has a mechanism to automatically limit the maximum speed according to the rotor ID number that is entered on the control panel. Ensure the correct ID is entered. Do not exceed the maximum mass of samples for the rotor. Adjust the speed of the rotor according to the mass of the samples being centrifuged (refer to the operating manual).	2	D	L				

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	4b. Mechanical failure of rotation parts due to unbalanced rotor	4b. An unbalanced rotor becomes unstable and could come off spindle or cause rotor to fail under additional stress (shatter), causing serious injury or death.	4b. Ensure the tubes to be centrifuged are matched in pairs or evenly distributed around the rotor. Tubes are to be filled to the same level with the same density fluid or are to be weight matched. The Beckman centrifuge has additional features built-in to prevent operation of an unbalanced rotor but should not be relied upon as the sole mechanism for preventing an unbalanced run.	2	E	L				
	4c. Mechanical failure of rotor due to damaged or corroded rotor.	4c. Risk of the rotor shattering causing catastrophic failure of the centrifuge and/or serious injury or death.	4c. Inspect the rotor before use for any signs of corrosion, abrasion or other surface damage to the rotor. Inspect for signs of damage that have caused cracks or other defects to the integrity to the rotor. Do not use if rotor is damaged. All rotors are to be thoroughly inspected every quarter.	2	D	L				
	4d. Mechanical failure of the centrifuge tubes.	4d. Risk of exposure to aerosols, or splashes or spills to the skin from the contents of the tubes. Risk of tube contents damaging the centrifuge operation and / or the rotor integrity.	4d. Select the correct centrifuge tubes for the task being undertaken. Particular attention needs to be paid to the material the tubes are made from and the seal the lid makes with the tube. The density of the samples and so the additional loading it will place upon the tubes also needs to be considered. Details of suitable tubes for different centrifugal loading is available in the Beckman manual. Ensure that the rotor is appropriate for the centrifuge tubes being used. The centrifuge tubes should fit snugly into the rotor chambers. Ill fitting tubes will be mechanically compromised. Ensure that the 'O'-rings on the rotor lid are properly in place and appropriately coated with vacuum grease to provide a proper seal for the rotor – this will contain any tube failure to within the rotor.	2	D	L				

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	4e. Chemical failure of the centrifuge tubes.	4e. Risk of exposure to aerosols, or splashes or spills to skin; damage to centrifuge operation and / or rotor integrity.	4e. Correct selection of the centrifuge tubes that are made from a material that is compatible with the chemical nature of the samples. For example, material that is solvent resistant. Ensure that the 'O'-rings on the rotor lid are properly in place and appropriately coated with vacuum grease to provide a proper seal for the rotor – this will contain any tube failure to within the rotor.	2	E	L				
	4f. Flammable liquids (volatile solvents).	4f. Risk of fire / explosion from the build-up of flammable, volatile liquids.	4f. Refer to separate risk assessment for the use of flammable liquids / solvents in the centrifuge. Correct selection of centrifuge tubes to ensure compatibility with solvents. Ensure the centrifuge tubes are properly capped. Ensure that the 'O'-rings on the rotor lid are properly in place and appropriately coated with vacuum grease to provide a proper seal for the rotor – this will contain any tube failure to within the rotor.	2	E	L				
5. Unloading the centrifuge	5a. Contact with rotating parts.	5a. Risk of hair or loose clothing being caught in rotating parts; risk of serious injury from contact with rotating parts.	5a. Never attempt to open the lid of a centrifuge or slow the rotor by hand or open the lid while rotor is in motion. The Beckman Avanti J-25 has safety features that lock the lid while the rotor is in motion.	2	D	L				
	5b. Mechanical failure of the centrifuge tube.	5b. Risk of exposure to aerosols or spills and splashes from the tube contents.	5b. Refer to 4d. above. Check the 'O'-rings on the rotor before each run.	2	D	L				
	5c. Lifting Hazard/manual handling of rotor.	5c. Muscle strains/neck/shoulder injury from incorrect lifting. Uncontrolled falling object/rotor if not handled properly.	5c. Training in lifting and handling of the rotors. Locating / storing rotors in a location that is at a convenient height to lift and handle the rotors. Storage of rotors should be in a clean area and turned upside down to allow the draining of any condensation.	2	D	L				

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Please complete if any of the items below are applicable.

Is there a requirement for safe storage?

Keep lid ajar when not in use, as this prevents the build up of condensation.

How is access prevented except to authorised persons?

The door is always locked unless in use. Authorised persons have access to the key.

In the event of an emergency you will..... (include first aid provisions, procedure if spills/leaks/accident/fire/injury

- In the event of a broken tube in the centrifuge, either the rotor, with the lid attached, is taken to the fume hood (in the case of a hazardous substance), or taken to a sink where the substance can be cleaned out of the rotor safely using the guild lines set out in the appropriate risk assessment for use of that substance / sample.
- Use the correct detergent to clean rotor. Alumminium rotors should not be cleaned with caustic cleaning agents as this will damage the anodising and impair the chemical resistance of the rotor. Caustic cleaning agents can cause corrosion of the rotor.
- In the event of an injured back / neck / shoulder a first aid officer is to look at it and if injury persists, see a doctor.

Emergency contact numbers are: 000, UNSW emergency response x56666

OTHER ACTION REQUIRED TO ENSURE THE SAFETY OF PERSONS INVOLVED, EQUIPMENT, ENVIRONMENT, MEMBERS OF THE PUBLIC

The task should not 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. _____