Safety Documentation

Please select the forms you require by selecting the check boxes below.
You can select more than one.

☑ **Risk Assessment** ☑ **Method Statement** ☐ **Chemicals COSHH**

Once you have made your selections, scroll down and complete the forms.

Buttons: [+] will add a row to a list [X] will delete a row from a list

You may save this file to a local drive at any time.
When you have finished, save the file to a local drive and email it to your supervisor for authorisation.

Supervisors - There is a sign-off section at the end of the document set that must be completed.

Staff may "self authorise", (as a supervisor), but the forms must still be submitted to the DSO for approval.

IMPORTANT:

YOU ***MUST NOT*** START ANY PRACTICAL WORK UNTIL THESE FORMS HAVE BEEN RETURNED TO YOU WITH **BOTH** YOUR SUPERVISOR's AND DSO's APPROVAL SIGNATURES ATTACHED.

Please complete these fields

School or Service	Wolfson School of Mechanical, Electrical and Manufacturing Engineering
Department	Center for Biological Engineering
Originator name	Jen Bowdrey
email address	j.bowdrey@lboro.ac.uk
Location	H34 CBE laboratories Garendon Wing Holywell Park
Project / Activity / Task	Heraeus Megafuge 40R Centrifuge use and maintenance
Supervisor Name	Carolyn Kavanagh

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Loughborough University
Center for Biological Engineering

Risk Assessment

Reference: SAF/MM/6502

Location: H34 CBE laboratories Garendon Wing Holywell Park

Originator: Jen Bowdrey

Project / Activity / Task: Heraeus Megafuge 40R Centrifuge use and maintenance

Is this process risk assessment for a : ○ Laboratory / Workshop ☑ General use

Category 1: Workplace	+
Centrifuges are located in Category 2 laboratories where other work is on going, and being used by other people.	x
Mechanical failure of rotating parts (often violent)	x
Contact with rotating parts	x
Sample imbalance causing machine movement/walking	x
Sample leaks causing aerosols, stress corrosion, contamination	x
Contact with contaminate components/vapours	x
Fire/explosion	x
Category 2: Hazardous and/or Harmful substances	+
Biological and chemical substances will be centrifuged, these will be individually risk assessed/COSHHed before they can be centrifuged.	x
Category 3: Activity	+
Lone working out of hours- if needed out of hours staff will each have their own risk assessment	x
Category 4: Organisation	+
N/A	x

Explain the risks associated with these hazards

People / Groups at risk: Everyone in the room — x

Enter risk details here:-	Impact	Probability	Risk Score
Sample leaks causing aerosols,corrosion& contamination	Slightly Harmful	Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
Centrifuge tubes are properly sealed before putting into the centrifuge, this will prevent spills.	Significantly	Moderately	x
Covers for the buckets are used to prevent spillages from spreading over the inside of the centrifuge and over the other sample tubes	Moderately	Moderately	x
The centrifuge is balanced to prevent the centrifuge from vibrating and causing damage to the rota, the centrifuge, the tubes and others in the lab.	Significantly	Significantly	x
If a spill/leak does occur, the centrifuge will be stopped as soon as possible, by pressing the stop button. The spill procedure will then be followed.	Significantly	Significantly	x

Process Risk Assessment Form (Continued)

Operators trained not to over fill the centrifuge tubes	Significantly	Moderately	x
Operators trained to only use appropriately designed tubes for use in centrifuges.	Significantly	Significantly	x
Make sure that the sample has been properly Risk assessed and COSHHed appropriately before hand, this means that you will know how to clean up if there is a leak or a spill.	Slightly	Significantly	x
Follow the spill clean up procedure, as set out in the SOP	Slightly	Slightly	x
Users are trained to use each type of centrifuge correctly.	Slightly	Slightly	x
If a spill has occurred within a bucket, open the bucket within a BSC.	Slightly	Slightly	x
Appropriate PPE (gloves and safety glasses) are worn for dealing with a spill	Moderately	Moderately	x

Residual Risk
Low

People / Groups at risk	Everyone in the room	x

Enter risk details here:-	Impact	Probability	Risk Score
Mechanical failure of rotating parts	Very Harmful	Unlikely	High

What are the control measures?	Lowers Impact	Lowers Probability	+
The centrifuge is correctly balanced , by placing a centrifuge tube with the same volume in the same position in the centrifuge bucket opposite.	Significantly	Significantly	x
The centrifuge is regularly checked for signs of wear and tear. This includes cleanliness and also corrosion of the rotor and the centrifuge as a whole. If any signs of wear and tear are found. Do not use the centrifuge and notify lab management immediately. This is included in the training given to users of the centrifuges.	Moderately	Slightly	x
Every centrifuge is checked regularly and serviced every two years.	Moderately	Moderately	x

Residual Risk
Low

People / Groups at risk	Operator and people in proximity	x

Enter risk details here:-	Impact	Probability	Risk Score
Sample imbalance causing machine movement/walking	Slightly Harmful	Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
The centrifuge is correctly balanced by placing a centrifuge tube with the same volume in the equivalent position in the centrifuge bucket opposite.	Significantly	Significantly	x
Centrifuges are placed on an horizontal level surface and there is clearance around the centrifuge whilst in operation.	Slightly	Slightly	x
Users are trained to correctly balance the centrifuges and also what to do it incorrectly balanced.	Moderately	Slightly	x

This is a large piece of equipment which centrifuges larger volumes. This means that if it were to move while in use, and fall on someone it could cause significant injury. Crucial to safe operation is to make sure that it is correctly balanced.	Slightly	Slightly	x
		Residual Risk	Low

People / Groups at risk	Operator only		x
Enter risk details here:-	Impact	Probability	Risk Score
Contact with rotating parts	Very Harmful	Highly Unlikely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
Operators trained to make sure that the centrifuge is properly closed before use	Significantly	Significantly	x
Operators trained not to try and open while centrifuge is in use, and the rota is turning.	Significantly	Significantly	x
Most centrifuges have inbuilt features where you cannot open them until the rota has completely stopped moving	Significantly	Significantly	x
Never attempt to slow the rotor by hand. This must not be attempted	Significantly	None	x
Rotating parts are dangerous, and can cause shearing and impact injuries.	None	None	x
The centrifuge rotors are checked regularly as part of regular maintenance. The rotor is also checked when the centrifuge is serviced every two years.	Slightly	Slightly	x
Has a large rotor, which moves quickly while in use, could cause significant damage, users need to use with care. If the rotor broke, it could cause significant damage to lab users and equipment. Rotors are checked at service.	Moderately	Slightly	x
		Residual Risk	Low

People / Groups at risk	Everyone in the room		x
Enter risk details here:-	Impact	Probability	Risk Score
Contact with contaminates and vapours	Harmful	Unlikely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
Make sure that risk assessments and COSHH forms have been completed and approved before use. This will set out the hazards and how to deal with contaminates if there is a spill	Moderately	Slightly	x
Follow the procedure set out in the Spill SOP and the completed risk assessment to safely clear upany spills.	Slightly	Slightly	x
Operators trained never to centrifuge anything that is capable of developing flammable or explosive vapours.	Moderately	Slightly	x
Wear appropriate PPE for the laboratory environment you are in and the chemicals/contaminants you are dealing with	Slightly	Slightly	x

Process Risk Assessment Form (Continued)

Large volumes are being centrifuged, this means that if a spill occurs depending on the volume it could be classed as a large spill. Need to be aware of the spill procedure (SOP038)	Slightly	Slightly	x
		Residual Risk	Low

People / Groups at risk	Everyone in the room		x
Enter risk details here:-	Impact	Probability	Risk Score
Fire and Explosion	Very Harmful	Highly Unlikely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
The Centrifuge is regularly checked for wear and tear, and if any is found it is reported to the lab management and the use of the centrifuge is halted until investigations are completed	Significantly	Significantly	x
The centrifuges have been PAT tested and are within date. If it is not within the test date- report and do not use until cleared to do so	Significantly	Significantly	x
Make sure you are aware of fire exits and fire procedures within the lab.	Slightly	Slightly	x
Operators are trained not to over load the rotor, as this can cause the rotor to explode.	Significantly	Slightly	x
Users trained to be aware not to centrifuge materials capable of developing flammable or explosive vapours.	Moderately	Moderately	x
		Residual Risk	Low

People / Groups at risk	Operator only		x
Enter risk details here:-	Impact	Probability	Risk Score
Lone working with centrifuge	Harmful	Highly Unlikely	Low
What are the control measures?	Lowers Impact	Lowers Probability	+
All operators are trained to use centrifuges safely	Significantly	Significantly	x
Each lone worker has to have an approved lone working risk assessment for the work they are doing.	Significantly	Significantly	x
Each lone worker has an emergency contact and follows university procedures for lone working including using the lone working app. Must have their mobile phone with them at all times	Moderately	Moderately	x
		Residual Risk	Low

+ Add another Risk

With these controls in place, the risk is:

Process Risk Assessment Form (Continued)

The activity is LOW RISK - and is effectively controlled

Loughborough University
Center for Biological Engineering
Safety Method Statement

Loughborough University

Reference: SAF/MM/6502

Location	H34 CBE laboratories Garendon Wing Holywell Park	Originator	Jen Bowdrey
Project / Activity / Task	Heraeus Megafuge 40R Centrifuge use and maintenance		

What equipment will be used in this activity?	+
Heraues Megafuge 40R (H34)	x

What training must be completed to do this activity?	+
Initial CBE lab training.	x
Lab leaders training for each laboratory within the CBE.	x
Training will be given for each type of centrifuge, this will cover use and basic maintenance such as cleaning and also checking for signs of wear and tear, and how to balance sample tubes correctly.	x
Only specified users can use this piece of equipment as it is project/group specific.	x

What chemicals are being used? (These must be included in the COSHH Form)	+
The biological substances and chemicals being used in the centrifuges are project specific, these will be COSHHed and Risk assessed on a project to project basis	x

Spill and accident procedures.	+
Intially, stop the centrifuge- DO NOT OPEN. Leave the centrifuge closed for 30 minutes to allow any droplets to settle, leave a notice on the centrifuge to stop other lab users from opening. Notify other lab users in the lab.	x
Notify the lab leader, and lab manager	x
Follow the procedures detailed in SOP038 - Spills and also the SOP089- Use and maintenance of Centrifuges and SOP190	x
If any chemicals have been spilled in the centrifuge, check the COSHH forms to see how to properly clean them up.	x
If an accident has occurred, immediately notify the lab manager.	x
If the spill is contained in a bucket that can be removed from the centrifuge, the centrifuge bucket needs to be opened within a BSC to prevent further spillages and release of any contaminates.	x
PPE should be worn at all times. This includes lab coat, safety glasses, gloves.	x

Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)	+
Press the stop button, this will automatically stop the rota and it will slow down and stop. Vacate the laboratory using the nearest Fire escape.	x

References.	+
SOP 038 - Biological Spill Response	x
SOP 190 - Heraeus Megafuge 40R Centrifuge use and maintenance	x
SOP088 - Use and Maintenance of Centrifuges	x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+
For General Use		x

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Tightly seal the centrifuge tubes, and place in the sample buckets in the centrifuge and make sure the sample tubes are correctly balanced.	Make sure the centrifuge is balanced correctly to prevent damage to the equipment	x
If the centrifuge has bucket lids, secure them to the buckets	If there is a spill or something happens to one of the sample tubes, this helps to prevent contamination of the whole centrifuge.	x
Close the lid firmly.	The centrifuge will not start until the lid is properly closed.	x
Select the correct speed and time required. Some centrifuges are also able to alter their temperature. (See individual manuals for setting the temperatures etc, if setting the temperature this will need to be done in-advance, so that the centrifuge can reach the correct temperature)	The majority of centrifuges are able to switch between rpm and g. For the temperature controlled ones, the temperature needs to be set a while before use, to allow time to reach temperature.	x
Press start, before moving away from the centrifuge wait until the centrifuge has reached the required speed.	This means that you will catch if something has gone wrong or is incorrectly balanced, as the centrifuge will vibrate significantly and also make a loud noise.	x
When the centrifuge has finished, press open, and the lid will release.	Check that there hasn't been a spill.	x
Before removing the bucket lids, quickly check that the sample tube lids are still on and there are no spillages. If no spills, remove lids.	If there has been a spill, follow the correct procedures.	x
Remove the samples from the centrifuge. If you have used balances, remove them from the centrifuge also.	Remove samples gently, as you do not want to dislodge any pellets which have been created.	x
		x
Routine Checks		x
To be done as part of the weekly house keeping	Outlined in the SOP088- Use and maintenance of Centrifuges	x
		x
Preparation for servicing- this also includes decontaminating the centrifuge and completing a decontamination form.	Outlined in the SOP088 - Use and Maintenance of Centrifuges	x
		x
Spills	Outlined in the SOP-038 Biological Spill Response	x
		x
		x
		x
		x

Loughborough University

Supervisor and Departmental Safety Office (DSO) Sign-off.

Supervisors

Please check the documents above and if you want to approve them:

1) Electronically sign this document
2) Save it to a local drive (You will be prompted to do this)
3) eMail the signed document to the DSO.

DSO

Please review the documents above and if you want to approve them:

1) Enter the reference numbers as appropriate
2) Electronically sign this document
3) Save it to a local drive (You will be prompted to do this)
3) eMail the signed document to the originator

IF YOU DO NOT WANT TO AUTHORISE THE FORMS,

Please do not sign the form, but click the "Not Approved" check-box and return it to the originator by email stating why and what you expect them to do to put it right in the comments box below.

Not Approved ☐

Supervisors Signature: Carolyn Kavanagh — Digitally signed by Carolyn Kavanagh Date: 2020.06.01 17:22:20 +01'00'

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MM/6502	SAF/MM/6502	

DSO Signature: Keven G Smith — Digitally signed by Keven G Smith Date: 2020.07.27 11:34:11 +01'00'

This document set must be reviewed and re-approved at the following times:

1) After the first occurrence of the activity described above (Review only)
2) After any change to the procedure or reagents used
3) After any incident resulting from this activity
4) At least annually from the date of approval

Next Review: 24 Jul 2021

Review comments