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	Centre for Biological Engineering
Originator name	Carolyn Kavanagh
email address	c.l.kavanagh@lboro.ac.uk
Location	CBE Laboratories (H34, H29,H27)
Project / Activity / Task	Use and Maintenance of Hot Plate and Hot Plate Stirrers
Supervisor Name	Mark Taylor

Version : 2.19

Loughborough University
Centre for Biological Engineering

Risk Assessment

Reference: SAF/MEME/6812

Location	CBE Laboratories (H34, H29,H27)	Originator	Carolyn Kavanagh
Project / Activity / Task	Use and Maintenance of Hot Plate and Hot Plate Stirrers		

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

Category 1: Machinery & work equipment:				
Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards	+
	N/A	Electrical test lables current		x
				x

Category 2: Workplace	+
Falling/moving objects/materials	x
Localised hot surfaces	x
Category 3: Hazardous and/or Harmful substances	+
Biological substancees (Infection)	x
Substances at high temperature	x
Chemical Hazard	x
Category 4: Work activity	+
Lone working out of hours	x
Category 5: Work organisation	+
N/A	x

Explain the risks associated with these hazards

People / Groups at risk	Operator only	x

Enter risk details here:-	Impact	Probability	Risk Score
Mis-use of hot plate stirrer	Slightly Harmful	Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
All CBE Laboratory users are trained on the use and take care when using the hot plate stirrer and understand associated consequences of mis-use.	Moderately	Moderately	x

Residual Risk
Low

People / Groups at risk	Operator only	x

Process Risk Assessment Form (Continued)

Enter risk details here:-	Impact	Probability	Risk Score
Electrical hazard	Harmful	Highly Unlikely	Low
What are the control measures?	Lowers Impact	Lowers Probability	+
All hot plates are PAT tested 2 yearly a visual inspection will be made prior to use to ensure that cables and hotplate are not damaged.	Moderately	Moderately	x
Lab users will ensure cables do not come into contact with hot plate surface and be a source of ignition or electrocution.	Slightly	Slightly	x
Containers will be only 3/4 full to avoid spillage of material onto hot plate.	Slightly	Slightly	x
		Residual Risk	
		Low	
People / Groups at risk	Operator only		x

Enter risk details here:-	Impact	Probability	Risk Score
Lone working with hot plates	Slightly Harmful	Likely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
All Operators are fully trained before being allowed to work out of hours	Moderately	Moderately	x
Permission to work lone hours should be sought. All operators have a valid out of hours risk assessment for working out of hours detailing the work. The risks of using the hot plate out of hours will be assessed on an individual basis.They use the lone working app.using the following link. (https://www.lboro.ac.uk/media/wwwlboroacuk/content/healthandsafety/downloads/Lone%20Working%20App%20Instructions.pdf)	Moderately	Moderately	x
		Residual Risk	
		Low	
People / Groups at risk	Operator only		x

Enter risk details here:-	Impact	Probability	Risk Score
Risk of infection from biological material	Harmful	Highly Unlikely	Low
What are the control measures?	Lowers Impact	Lowers Probability	+
All Biological material is contained inside lidded vials.	Significantly	Significantly	x
All operators are trained how to use the hot plate with the material safely	Moderately	Moderately	x
Biological materials are risk assessed and have good provenance with certificates of analysis.	Moderately	Moderately	x
Operators wear gloves	Moderately	Moderately	x
Safety glasses worn to prevent contaminants entering the eye .	Moderately	Moderately	x
		Residual Risk	
		Low	
People / Groups at risk	Operator only		x

Process Risk Assessment Form (Continued)

Enter risk details here:-	Impact	Probability	Risk Score
Hot surfaces of hot plate	Harmful	Likely	High
What are the control measures?	Lowers Impact	Lowers Probability	+
Hot plates can reach high temperatures and can cause a burn injury. The hot plate remains hot for a short time after shut down. Liquids that are heated can cause scolding. All users are trained how to use hot plates safely	Moderately	Moderately	x
Warning signs are put in place to warn others users that the hot plate is in operation or has been in use.	Moderately	Moderately	x
Lab coat, heat proof gloves and safety glasses are worn when removing containers from the hot plate.	Moderately	Moderately	x
The temperature and speed dials can be taped to ensure they are not tampered/knocked during operation.	Slightly	Slightly	x
		Residual Risk	
		Low	

People / Groups at risk	Everyone in the room	x

Enter risk details here:-	Impact	Probability	Risk Score
Chemical hazard during heating process	Harmful	Likely	High
What are the control measures?	Lowers Impact	Lowers Probability	+
Some chemicals will not be stable when heated. All chemicals used will be Risk assessed along with procedure they will be used in. This will include looking at flash points and other hazardous characteristics before use with the hot plate. Flammable substances or those that produce a vapor when heated must not be used unless specific risk assessment conducted.	Slightly	Slightly	x
Containers will not be more than 3/4 full.	Slightly	Slightly	x
Hot plate will not be left unattended for long periods while in operation and a sign will be placed next to the equipment to alert others to the dangers.	Slightly	Slightly	x
Lab coat, gloves and safety glasses will be worn.	Moderately	Moderately	x
Lab users will check cables on the cabinet are not touching the hot plate before use.	Slightly	Slightly	x
		Residual Risk	
		Low	

People / Groups at risk	Operator and people in proximity	x

Enter risk details here:-	Impact	Probability	Risk Score
Slips trips and falls	Slightly Harmful	Highly Unlikely	
What are the control measures?	Lowers Impact	Lowers Probability	+
Work area to be kept clear and tidy. Any spillages immediately cleaned up adhering to relevant CBE SOP038	None	None	x
		Residual Risk	

Process Risk Assessment Form (Continued)

People / Groups at risk	Everyone in the room			x
Enter risk details here:-		Impact	Probability	Risk Score
Exposure to Covid-19		Very Harmful	Highly Unlikely	Medium
What are the control measures?		Lowers Impact	Lowers Probability	+
Follow all national, local and University Covid-19 guidelines, and respect local Lab rules. Frequent washing (20 seconds minimum)/ sanitizing of hands to be carried out. Distancing should be 2 metre, but 1M+ is allowed where all concerned are wearing face coverings and this cannot be avoided Check local Covid tier rating		None	Moderately	x
				Residual Risk: Low

+ Add another Risk

Who may be at risk as a result of this activity?

Personnel Group	Maximum (Task setup/ Re-configuration)	High (Performing the task)	Medium (Observing the task)	Low (Present, but not involved)	Lone Working (Out of hours)	No Exposure Permitted	Total
Academic Staff	0	0	0	0	0	0	0
Technical Staff	4	4	0	0	0	0	8
Research Staff (PDRA)	10	10	0	0	0	0	20
Research Students (PhD)	10	10	0	0	0	0	20
Students (Undergraduate / MSc)	0	0	0	0	0	0	0
Visitors	0	0	0	0	0	0	0
Others - Over-type as needed	0	0	0	0	0	0	0
Total	24	24	0	0	0	0	48

With these controls in place, the risk is:

The activity is LOW RISK - and is effectively controlled

Loughborough University
Centre for Biological Engineering
Safety Method Statement

Loughborough University

Reference: SAF/MEME/6812

Location	CBE Laboratories (H34, H29,H27)	Originator	Carolyn Kavanagh
Project / Activity / Task	Use and Maintenance of Hot Plate and Hot Plate Stirrers		

What equipment will be used in this activity?

+
Labinco Hot Plate stirrer (H34) Bibby Hot plate (H29) Corning Hot plate (H27) — x
Lidded vials/eppendorfs — x
Magnetic follower and containers (if using the stirrer function) — x
Thermometer and holder (if required) — x

What training must be completed to do this activity?

+
CBE Laboratory Induction Training . Lab Leader/supervisor Training. — x
Hot plate equipment training — x

What chemicals are being used? (These must be included in the COSHH Form)

+
None . Any reagent used will be individually risk assessed. SDS link available with the COSHH — x
70% IMS for cleaning (COSHH CBE 335 MEME 655) — x

Spill and accident procedures.

+
SOP038 Spill Response offers guidance on how to deal with spills. Any accidents must be reported through the University accident reporting procedures. Any biological material spilled onto the hot plate must be cleaned up immediately once cool enough to do so. — x

Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)

+
Switch off the hot plate. Leave sign to alert others to dangers — x

References.

+
SOP059 Use and Maintenance of Hot Plate Stirrers — x
SOP038 Biological Spill Response — x
— x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+
Read SOP059 for full details	Check Equipment for Faults	x

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
(i)Place the Hot Plate /hot plate Stirrer on the bench top, ensuring that it is stably seated away from the bench edge and away from high traffic work areas and other equipment particularly electrical cables. NOTE: Alternatively, the Hot Plate Stirrer can be placed inside the fume hood, ensuring that it is stably seated at least 10cm inside the hood and positioned to either the right or left side, so as not to obstruct other operators using the fume hood.	The hot plate stirrer MUST NOT be removed or operated outside the Laboratory without first consulting the Laboratory Manager.	x
(ii) Prepare the solution to place on stirrer. Make sure that container is < ¾ full and the total load volume does not exceed 5 litres. CAUTION: The Operator MUST ensure that both the container and the solution are stable under the intended operating conditions i.e. temperature and stirring speed. The Operator should consult the appropriate COSHH risk assessment before proceeding. If unsure consult the Departmental Safety Officer (DSO) before use. (iii) Don a pair of safety goggles and place container on the centre stirring plate, insert magnetic follower. If intending to heat the solution, fix a thermometer to side of container using the thermometer holder	(ii) The hot plate stirrer can reach very high temperatures and care must be taken to avoid contacting the hot plate surface. Users MUST ensure that the Hot Plate Stirrer is located in a positioned on the bench (or fume cupboard, as applicable) that prevents laboratory personnel leaning over the surface and minimizes the risk of loose cables or other items coming into contact with the hot surface. (iii) The Hot Plate Stirrer MUST NOT be used with solutions containing flammable, heat unstable or any other chemical capable of forming hazardous vapors	x
(v) Plug the equipment into the mains, ensuring that the temperature dial and rpm dial are at lowest setting possible. CAUTION: Before proceeding, ensure that there are no electrical cables in contact with the hot plate.		x
(vi) If intending to heat the solution, place the warning sign in clear view beside hot plate to warn other lab users that the stirrer is in operation. NOTE: 2 x free standing laminated warning signs are available (only required if heating solution).		x
(vii) Press the 'start' button (viii) Slowly turn the temperature dial (right hand dial) clockwise to increase to desired temperature NOTE: The temperature dial is not very accurate. Regularly check the thermometer to obtain the correct setting. CAUTION: The temperature MUST NOT exceed 100°C.		x
(ix) To initiate the magnetic stirrer, slowly turn the speed dial (left hand dial) clockwise, working slowly up to the desired speed. (x) Once the settings have been established, position a piece of tape over the temperature and speed dial, to prevent unintentional interference or tampering with the settings. CAUTION: Ensure the dials are not accidently adjusted when positioning tape.		x

(xi) The Hot Plate Stirrer can be left unattended but ensure the container and its contents are stable before leaving. CAUTION: The stirring speed MUST NOT exceed 100rpm. CAUTION: If heating solutions, DO NOT leave the Hot Plate Stirrer unattended for long periods.	(iv) A COSHH risk assessments MUST be completed and approved prior to use of the Hot Plate with any solutions containing hazardous chemicals. (v) Users MUST always wear safety goggles during operation of the Hot Plate Stirrer. (vi) To avoid the potential for splashing of hot liquids, solutions MUST NOT be heated or stirred in vessels that are more than ¾ ways full. The total volume MUST NOT exceed 5 liters. (vii) All vessels MUST be placed on the stirring plate BEFORE connecting the equipment to the power supply or switching on. (viii) Appropriate Hazard signs MUST be placed near to the Hot Plate Stirrer during and after its operation to warn other lab users of hot surfaces until the unit as cooled. (ix) The Hot Plate Stirrer should not be left unattended for long periods	x
5.2. Shut Down (i) Carefully remove tape obstructing dials. Turn speed dial anticlockwise to reduce rpm (minimum) and the temperature dial anticlockwise to reduce heat. (ii) Press the 'off' button and disconnect from power supply. (iii) Once hot plate has cooled remove sample container. (iv) If sample must be removed from heating block immediately to prevent damage to the sample, don a pair of heat resistant (gauntlet type) gloves located in the autoclave room and transfer container to a heat resistant surface. DO NOT place heated containers directly on the bench. Place warning sign next to solution container to notify other lab users. CAUTION: The container and its contents may be extremely hot, use extreme care. (v) Once the hot plate has cooled, wipe plate with 70% IMS. (vi) Remove any warning signs.		x

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:

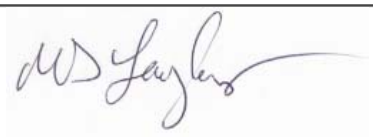
1) Enter the reference numbers as appropriate
2) Electronically sign this document
3) Save it to a local drive (You will be prompted to do this)
3) eMail the signed document to the originator

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



Digitally signed by Mark Taylor
Date: 2021.05.13 17:36:54 +01'00'

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MEME/6812	SAF/MEME/6812	

DSO Signature

Keven G Smith

Digitally signed by Keven G Smith
Date: 2021.05.28 11:33:11 +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: 13/05/2022

Review comments