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	Sotiria Toumpaniari
email address	s.toumpaniari@lboro.ac.uk
Location	H27
Project / Activity / Task	Dehydration , deparaffinization and rehydration of tissue sections
Supervisor Name	Prof Sotiris Korossis

Version : 2.17

Loughborough University
Centre for Biological Engineering

Risk Assessment

Reference: SAF/MEME/6745

Location: H27

Originator: Sotiria Toumpaniari

Project / Activity / Task: Dehydration , deparaffinization and rehydration of tissue sections

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	Cutting/severing	Electrical test labels current	N/A	x

Category 2: Workplace +

Slips / trips / falls on a level x

Category 3: Hazardous and/or Harmful substances +

Irritant substances x

Flammable substances x

Sensitising substances x

exposure to Covid-19 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: Everyone in the room x

Enter risk details here:-	Impact	Probability	Risk Score
Irritant chemicals	Harmful	Likely	High

What are the control measures?	Lowers Impact	Lowers Probability	+
Work in fume cupboard and wear appropriate PPE- lab coat and nitrile gloves.	Significantly	Significantly	x

Residual Risk: Low

People / Groups at risk: Operator and people in proximity x

Enter risk details here:-	Impact	Probability	Risk Score
Broken glass from glass slides and cover slips	Harmful	Likely	High

What are the control measures?	Lowers Impact	Lowers Probability	+

Process Risk Assessment Form (Continued)

Bin for broken glass and collect broken glass wearing cut resistant glove-class 5.	Significantly	Significantly	x
			Residual Risk: Low

People / Groups at risk: Everyone in the room			x
Enter risk details here:-	Impact	Probability	Risk Score
Flammable substances	Harmful	Likely	High
What are the control measures?	Lowers Impact	Lowers Probability	+
Do not have sources of ignition nearby. Keep substances in containers. Safely store away	Significantly	Significantly	x
			Residual Risk: Low

People / Groups at risk: Everyone in the room			x
Enter risk details here:-	Impact	Probability	Risk Score
Sensitiser substances	Harmful	Likely	High
What are the control measures?	Lowers Impact	Lowers Probability	+
Work in fume cupboard and wear appropriate PPE- lab coat and nitrile gloves. Safely store containers	Significantly	Significantly	x
			Residual Risk: Low

People / Groups at risk: Operator only			x
Enter risk details here:-	Impact	Probability	Risk Score
Cutting fingers with scalpel	Very Harmful	Likely	Unacceptable
What are the control measures?	Lowers Impact	Lowers Probability	+
Wear cut resistant gloves class 5 on the hand that holds the tissue.	Significantly	Significantly	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	Harmful	Unlikely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
Ensure that the work area is kept clear and tidy, no obstacles on the floor and any spillages will be dealt with immediately to CBE SOP	Slightly	Moderately	x
			Residual Risk: Low

People / Groups at risk: Operator only			x
Enter risk details here:-	Impact	Probability	Risk Score
Lone working	Harmful	Unlikely	Medium

Process Risk Assessment Form (Continued)

What are the control measures?	Lowers Impact	Lowers Probability	+
Permission to work out of hours must be obtained prior to work commencing, and must be adhering to CBE protocols. Sign in using the lone working Power App. Inform security that you are lone working in the building - time of arrival and leaving. Inform a colleague or supervisor that you intend to work independently and state duration. If duration is longer than 2 hours you should be accompanied . Ensure you have a mobile phone at all times.	Moderately	Moderately	x

	Residual Risk
	Low

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 / sanitizing of hands / gloves to be carried out. Touch points and surfaces to be cleaned / wiped down after use. Social distancing should be maintained at 2 metre, but 1M+ is allowed where all concerned are wearing face coverings 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	1	0	0	0	0	1
Technical Staff	0	0	0	0	0	0	0
Research Staff (PDRA)	0	2	0	0	0	0	2
Research Students (PhD)	0	2	0	0	0	0	2
Students (Undergraduate / MSc)	0	0	5	0	0	0	5
Visitors	0	0	0	0	0	0	0
Others - Over-type as needed	0	0	0	0	0	0	0
Total	0	5	5	0	0	0	10

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/6745

Location: H27

Originator: Sotiria Toumpaniari

Project / Activity / Task: Dehydration , deparaffinization and rehydration of tissue sections

What equipment will be used in this activity?	+
Glass slides	x
Glass cover slips	x
Bath for glass slides	x
Pipette gun	x
Stripettes	x
Duran bottles	x
Volumetric cylinders	x
Scalpel	x
Metallic tray	x
Orbital shaker	x
Baths for histological slides	x
Well plate or plastic container	x
Sharps bin	x
Camatril® (KCL 730) nitrile gloves	x

What training must be completed to do this activity?	+
Sharps use	x
Use of chemical substances	x

What chemicals are being used? (These must be included in the COSHH Form)	+
Xylene	x
Ethanol	x
Distilled water	x

Spill and accident procedures.	+
Using an absorbent material collect solution and pour it in the waste bottle for the corresponding solution. Used absorbent material should be left in the fume hood until the solution is evaporated.	x

Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)	+
Dispose contaminated gloves. Leave note with a name of the operator and sate mentioning not to move anything from the area.	x

References.	+
CBE code of practice, SOP004, SOP037, SOP039	x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+
Wear PPE mentioned above.	Check if PPE is damaged and replace if it is.	x
Prepare baths for slides containing appropriate reagent.	Pour solutions with care avoiding spillages. If there is a spillage follow SOP039.	x
Prepare Duran bottles for collecting waste solutions	If there is a spillage follow SOP039. Check if they are broken.	x
Prepare ethanol dilutions (70% vol and 95% vol) using volumetric cylinders, if volumes are large, or pipette gun and stripettes for smaller volumes.	Work in fume hood. In case of spillage, use absorbent paper.	x
Place formalin fixed tissues in 70% ethanol for 1h.	Collect all formalin in waste bottle that is only for formalin containing solutions.	x
Remove samples using tweezers from ethanol when required and place them on a metal tray to cut pieces that will fit in the biopsy cassettes. using a scalpel or pair of scissors.	Whilst removing samples, in case of spillage, use absorbent paper.	x
Use a scalpel or pair of scissors to cut samples and then, place them in container with 70% vol.	Use single use scalpel and discard in bin for sharps. If single use scalpel does not exist, put and then, remove blade wearing cut-resistant glove class 5 and discard blade in sharps bin.	x
Remove 70% vol ethanol using strippete and pipette gun and replace it with 95% vol ethanol for 1h.	In case of spillage, use absorbent paper.	x
Remove 95% vol ethanol using strippete and pipette gun and replace it with 100% vol ethanol for 1h	In case of spillage, use absorbent paper.	x
Refresh 100% vol ethanol for another 1h (x2).	In case of spillage, use absorbent paper.	x
Place samples in xylene in a glass container for 1h (x2).	Wear Camatril (KCL 730) gloves for handling xylene and only handle it in fume hood.	x
The samples should be placed on an orbital shaker when they are immersed in ethanol and xylene.	Avoid having liquids near the plugs. Have an absorbing paper under the containers	x
Then, embed samples in paraffin and section them.	Separate risk assessment has been performed	x
Collect paraffin sections and place them in a water bath.		x
Use glass slides to collect the paraffin sections.		x
Place the glass slides on hotplate using tweezers to help the paraffin sections stick onto the glass for 20-30 min.		x
Prepare glass or chemical resistant baths that each one contains xylene; 70%, 95% and 100% ethanol.		x
Dip paraffin-embedded samples in xylene solution using tweezers for 10 min (x2)	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x
Dip samples in 95% ethanol solution using tweezers for 5 min (x2)	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x
Dip samples in 70% ethanol solution using tweezers for 2 min (x1)	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x
After the staining, dip samples in 95% ethanol solution using tweezers for 5 min (x1)	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Dip samples in 100% ethanol solution using tweezers for 5 min (x2)	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x
Dip samples in xylene solution for 5 min (x2).	Be cautious to avoid dropping the glass slides, cover the bath to prevent spillages and collect in appropriate waste container.	x
Collect used xylene in glass bottle for xylene waste and let the containers dry overnight in the fume hood before washing them.		x

Loughborough University
Centre for Biological Engineering

COSHH Form

Reference: SAF/MEME/ 970, 971

Location: H27

Originator: Sotiria Toumpaniari

Project / Activity / Task: Dehydration , deparaffinization and rehydration of tissue sections

CHEMICAL NAME

Xylene

CAS No. 1330-20-7

W.E.L. (Itel / stel)


Hazard Rating: High

OVERALL RISK: Medium

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
40	ml	18	Closed	Volatile Liquid	☑ Eyes ☑ Skin ☑ Inhaled ☑ Ingested	Low

Hazard Statement and Description	Precaution Statement and Description
H226 Flammable liquid and vapour.	P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
H304 May be fatal if swallowed and enters airways.	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
H312 + H332 Harmful in contact with skin or if inhaled.	P280 Wear protective gloves/protective clothing/eye protection/face protection.
H315 Causes skin irritation.	P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
H319 Causes serious eye irritation.	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remov
H335 May cause respiratory irritation.	P370 + P378 In case of fire: Use dry powder or dry sand to extinguish.
H373 Causes damage to organs through prolonged or repeated expos	

How will the precautions listed above be implemented?

Wear nitrile gloves (Camatril® (KCL 730)) for splash contact and fluorinated rubber gloves (Vitoject® (KCL 890)) for full contact, lab coat and goggles. Label the waste bottle and treat it as cytotoxic waste (yellow and purple bags).

Special Storage and Containment Measures	Disposal Method
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	Collect used xylene in a glass bottle and record how is disposed. Keep

How will spillages be dealt with?

Use spill kit. Contain spillage, and then collect by wet-brushing and place in container for disposal according to local regulations.

CHEMICAL NAME

Ethyl alcohol

CAS No. 64-17-5

W.E.L. (Itel / stel)


Hazard Rating: High

OVERALL RISK: Low

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
100	ml	0.3	Semi Closed	Volatile Liquid	☑ Eyes ☐ Skin ☐ Inhaled ☐ Ingested	Low

Hazard Statement and Description	Precaution Statement and Description
H225 Highly flammable liquid and vapour.	P210 Keep away from heat/sparks/open flames/hot surfaces.
H319 Causes serious eye irritation.	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remov

COSHH Form (Continued)

	P370 + P378 In case of fire: Use of carbon dioxide for extinction.	x
	P403 + P233 Store in a well-ventilated place. Keep container tightly closed	x

How will the precautions listed above be implemented?	
Wear nitrile gloves, lab coat and goggles.	

Special Storage and Containment Measures	Disposal Method	
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Hygroscopic.	Hydrophylic organic solvent waste	x

How will spillages be dealt with?
Absorbent cloth / tissue and let it evaporate under fume hood.

+ Add another chemical

Statement of work (Process to be undertaken)

Xylene is used to remove remnants of unbound histological staining.
Pure ethanol and diluted ethanol solutions are used in various procedures including dehydration and rehydration of samples

Show Image

Personal protection requirements not covered in the precaution statements above.

Appropriate clothing (long trousers and skirts), closed shoes.

Sources of information and references

https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=GB&language=en&productNumber=534056&brand=SIGALD&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigald%2F534056%3Flang%3Den
https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=GB&language=en&productNumber=51976&brand=SIAL&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsial%2F51976%3Flang%3Den

Reference to **existing approved** Risk Assessment

With the current controls, the risk of using these chemicals is: Medium

Supervisor to check that the process involving the safe use of these chemicals has been satisfactorily evaluated

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: Professor Sotiris Korossis — Digitally signed by Professor Sotiris Korossis Date: 2019.06.04 16:00:23 +01'00'

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MEME/6745	SAF/MEME/6745	SAF/MEME/ 970, 971

DSO Signature: Keven G Smith — Digitally signed by Keven G Smith Date: 2021.03.26 16:58:14 Z

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: 26 Mar 2022

Review comments