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	School of Aeronautical, Automotive, Chemical and Materials Engineering
Department	Department of Chemical Engineering
Originator name	Nishant Joglekar
email address	n.joglekar@lboro.ac.uk
Location	CBE; H23, H30
Project / Activity / Task	Mitochondrial potential assay using the NucleoCounter® NC-3000™ system
Supervisor Name	Dr Karen Coopman

Version : 2.19

Loughborough University
Department of Chemical Engineering

Risk Assessment

Reference: SAF/MEME/6750

Location: CBE; H23, H30

Originator: Nishant Joglekar

Project / Activity / Task: Mitochondrial potential assay using the NucleoCounter® NC-3000™ system

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	N/A	Electrical test lables current	Lasers	x

Category 2: Workplace	+
Risk of asphixiation (Oxygen depetion)	x
Slips/Trips/Falls on the level	x
Category 3: Hazardous and/or Harmful substances	+
Biological substancees (Infection)	x
Hazardous reagents	x
Category 4: Work activity	+
Highly repetitive actions	x
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
Risk of Electric shock/hazard	Slightly Harmful	Highly Unlikely	

What are the control measures?	Lowers Impact	Lowers Probability	+
Regular PAT testing, every two years , ensures equipment is in good working order and electrically safe to use. Visually inspect cables and connectors before use. Refer to risk assessment 'SAF/MM/6554' for the 'Use and Maintenance of the NucleoCounter NC-3000'	Slightly	Significantly	x

Residual Risk: Low

People / Groups at risk: Operator only — x

Process Risk Assessment Form (Continued)

Enter risk details here:-	Impact	Probability	Risk Score
Lasers	Harmful	Highly Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
The lasers are housed within a closed system, where access is not possible by the users. Refer to risk assessment 'SAF/MM/6554' for the 'Use and Maintenance of the NucleoCounter NC-3000'	Significantly	Significantly	x

Residual Risk
Low

People / Groups at risk	Operator and people in proximity	x

Enter risk details here:-	Impact	Probability	Risk Score
Risk of asphyxiation	Very Harmful	Highly Unlikely	Medium

What are the control measures?	Lowers Impact	Lowers Probability	+
There is an oxygen monitor present which is checked regularly and will alarm when the oxygen level falls. Within the labs is an air handling system, this means that there is a regular turn over of air throughout the labs. Refer to risk assessment 'SAF/MM/6554' for the 'Use and Maintenance of the NucleoCounter NC-3000'	Moderately	Significantly	x

Residual Risk
Low

People / Groups at risk	Operator only	x

Enter risk details here:-	Impact	Probability	Risk Score
Biological Substances (infection)	Slightly Harmful	Highly Unlikely	

What are the control measures?	Lowers Impact	Lowers Probability	+
The biological substances such as cells will have been risk assessed before hand using a BRA. Most Biological material has good provenance and has been screened or will be used under quarantine conditions. Users trained in correct use and handling of biological materials Refer to risk assessment 'SAF/MM/6554' for the 'Use and Maintenance of the NucleoCounter NC-3000'	Significantly	Moderately	x

Residual Risk
Low

People / Groups at risk	Operator and people in proximity	x

Enter risk details here:-	Impact	Probability	Risk Score
Hazards from working with Reagents	Slightly Harmful	Highly Unlikely	

What are the control measures?	Lowers Impact	Lowers Probability	+
The reagents used will be individually COSHHed before being used. Refer to risk assessment 'SAF/MM/6554' for the 'Use and Maintenance of the NucleoCounter NC-3000'	Slightly	Slightly	x

Residual Risk
Low

Process Risk Assessment Form (Continued)

People / Groups at risk	Operator and people in proximity		x
Enter risk details here:-	Impact	Probability	Risk Score
Slips trips falls	Slightly Harmful	Highly Unlikely	
What are the control measures?	Lowers Impact	Lowers Probability	+
Ensure that the area is clear and tidy of floor based obstacles. Consult SOP038 spill response for spillages and correct clean up	None	Slightly	x
			Residual Risk: Low

People / Groups at risk	Operator only		x
Enter risk details here:-	Impact	Probability	Risk Score
Lone working	Slightly Harmful	Unlikely	Low
What are the control measures?	Lowers Impact	Lowers Probability	+
Should out of hours working be required, permission to work out of hours must be obtained prior to work commencing. Sign in using the lone working Power App (https://www.lboro.ac.uk/services/health-safety/loneworking/). It is advisable to also inform security so that they are aware of your location on campus for the duration of your lone working/out of hours . Inform academic supervisor and a colleague of intention to lone work and state duration of stay. Lone working duty officer will be appointed. Ensure you have mobile phone on person at all times. Always remember to log out of lone working app when leaving building at completion of the work	Slightly	Slightly	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	Unlikely	High
What are the control measures?	Lowers Impact	Lowers Probability	+
Weekly LU Covid personal lateral flow negative test recorded Follow all national, local and University Covid-19 guidelines, and respect CBE Lab rules. Frequent washing / sanitizing of hands / gloves to be carried out. Touch points and surfaces to be cleaned / wiped down after use. Distancing should be 2 metre, but 1M+ is allowed where all concerned are wearing face coverings Check local Covid tier rating	None	Significantly	x
			Residual Risk: Low

+ Add another Risk

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

Process Risk Assessment Form (Continued)

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	0	1	1	0	0	0	2
Research Staff (PDRA)	0	1	0	0	0	0	1
Research Students (PhD)	0	1	0	0	0	0	1
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	0	3	1	0	0	0	4

With these controls in place, the risk is:

The activity is LOW RISK - and is effectively controlled

Loughborough University
Department of Chemical Engineering
Safety Method Statement

Loughborough University

Reference	SAF/MEME/6750		
Location	CBE; H23, H30	Originator	Nishant Joglekar
Project / Activity / Task	Mitochondrial potential assay using the NucleoCounter® NC-3000™ system		

What equipment will be used in this activity?

	+
NucleoCounter NC-3000	x
NC-slide A2	x
Pipettes and tips	x
Microcentrifuge	x
Vortex	x

What training must be completed to do this activity?

	+
Initial lab training and induction	x
Training from a competent user of the nucleocounter NC-3000	x
Aseptic techniques	x

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

	+
Solution 7 - JC-1 dye	x
Solution 8 - DAPI.PBS	x

Spill and accident procedures.

	+
In the event of a spillage (any spillages will be less than 1ml), use a tissue to clear up the spillage and dispose of the tissue using the cytotoxic waste route. After the spillage has been cleaned, also wipe down the area with IMS and a tissue and dispose of the tissue using the cytotoxic waste route.	x

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

	+
Make sure all chemical containers are tightly closed and upright. Leave Nucleocounter/BSC on, and exit the laboratory. Remove all contaminated PPE and wash hands with soap and water.	x
Close laboratory doors and post warning signs to prevent others entering the laboratory and report the incident to the Laboratory Manager.	x

References.

	+
SAF/MM/6554	x
http://shop.chemometec.com/wp-content/uploads/2015/07/995-0019-SDS-Solution-7-UK-v3.pdf - SDS for solution 7	x
http://shop.chemometec.com/wp-content/uploads/2015/07/995-0020-SDS-Solution-8-UK-v3.pdf - SDS for solution 8	x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
The following samples will be prepared: 1) A positive control in which apoptosis has been induced using Staurosporine in the cells prior to staining with solution 7 and solution 8. 2) An untreated control in which the assay is run with healthy cells that have not been treated with any of the dyes. 3) Test samples in which cells post-thaw, 24hrs post-thaw, six days post-thaw at passage point, and 24hrs post-passage have been treated with solution 7 and solution 8. Approximately 1x10^6cells will be required for each sample.	Wear nitrile gloves, safety glasses, and a lab coat. Adhere to CBE SOPs and lab rules	x
Initially, cells will be harvested at each time point (for control samples or test samples), and 1x10^6cells will be resuspended in 1ml media.	Wear nitrile gloves and a lab coat.	x
12.5 µl of Solution 7 (final concentration: 2.5 µg/ml) to the cell sample and incubate 10-30 minutes at 37C in a water bath.	Wear nitrile gloves, safety glasses, and a lab coat.	x
Solution 7 stained cells will then be washed using centrifugation/ aspiration using PBS and following two washes, cells will be resuspended in 0.25 ml Solution 8.	Wear nitrile gloves, safety glasses, and a lab coat.	x
Following resuspension in solution 8, cells will be analysed immediately using the Nucleocounter with A2 slides - the "Mitochondrial Potential Assay" will be selected on the Nucleocounter.	Wear nitrile gloves, safety glasses, and a lab coat. Dispose of A2 slides in the purple cytotoxic sharps containers.	x

Loughborough University
Department of Chemical Engineering

COSHH Form

Reference: SAF/MEME/990 - 992

Location: CBE; H23, H30

Originator: Nishant Joglekar

Project / Activity / Task: Mitochondrial potential assay using the NucleoCounter® NC-3000™ system

CHEMICAL NAME

Solution 7 - contains DMSO and JC-1

CAS No. 67-68-5 (DMSO); 3520

W.E.L. (Itel / stel) N/A

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
0.04	ml	0.5	Semi Closed	Non-Volatile Liquid	Eyes, Skin, Inhaled, Ingested	Low

Hazard Rating: Low

OVERALL RISK: Low

Hazard Statement and Description	Precaution Statement and Description
EUH210 Safety data sheet available on request.	No Precaution statements applicable

How will the precautions listed above be implemented?

Concentration of DMSO too low in solution to be hazardous (>99% w/w in mixture)

Special Storage and Containment Measures	Disposal Method
Store in a tightly closed original container at dry cool and well-ventilated area. Store in a flammable liquid storage area.	While this solution is non-hazardous, this reagent should not enter drains and needs to be treated as hazardous waste. Any tissues are used to wipe up with traces of this reagent should be disposed of as hazardous waste using the yellow waste stream. Any tips with traces of the solution should be disposed in the yellow and purple cytotoxic sharps containers.

How will spillages be dealt with?

Please note: any material used to clean up a spill of hazardous material must also be disposed of as hazardous material.
Click here to see spill procedures

Any spillages will be less than 1ml, spillages such as these can be cleared up using a tissue which should then be disposed using the cytotoxic waste route. After the spillage has been cleaned, the area should be wiped down using IMS and a tissue which should then be disposed using the cytotoxic waste route.

CHEMICAL NAME

DAPI dilactate - part of solution 8 (<0.1% w/w in

CAS No. 28718-91-4

W.E.L. (Itel / stel)

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
1	ml	0.5	Semi Closed	Non-Volatile Liquid	Eyes, Skin, Inhaled, Ingested	Low

Hazard Rating: High

OVERALL RISK: Medium

This chemical has a high health risk associated with it.

Hazard Statement and Description	Precaution Statement and Description
H340 May cause genetic defects.	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for b
EUH210 Safety data sheet available on request.	IF ON SKIN: Wash with soap and water. If irritation persists, seek medical advice.
	IF SWALLOWED: Rinse mouth and drink plenty of water. In case of discomfort, seek me
	IF IN EYES: Rinse cautiously with water or physiological salt water for at least 15 minute
Justify the use of this chemical:	DAPI dilactate is present in low concentrations in solution 8 which is required for the assay.

How will the precautions listed above be implemented?

COSHH Form (Continued)

Gloves, safety glasses, and a labcoat will be worn to avoid any contact.

Special Storage and Containment Measures	Disposal Method
Store in a tightly closed original container in a well-ventilated area. Should not be kept near acids.	Any tissues containing traces of this solution should be disposed as cytotoxic waste using the yellow waste stream. Pipette tips containing traces of this solution should be disposed in purple cytotoxic sharps containers.

How will spillages be dealt with?

Please note: any material used to clean up a spill of hazardous material must also be disposed of as hazardous material.
Click here to see spill procedures

Any spillages are likely to be smaller than 2ml; for a spillage such as this, use an absorbent cloth / tissue to clear up the spillage and dispose of the cloth / tissue using the cytotoxic waste route. After the spillage has been cleaned, also wipe down the area with IMS and a tissue which should also be disposed using the cytotoxic waste route.
In the event of a larger spillage, resulting from the bottle of solution 8 getting knocked over, use a chemical spill kit. Spread the absorbent material in the spill kit over the liquid spill, and using a tissue transfer the absorbent into the disposal bag also provided within the spill kit. Label the bag and contact the lab manager to find out how to dispose of it. Also record the spillage in the Spill Record Log.

CHEMICAL NAME

Sodium azide - part of solution 8 (0.01% w/w in

CAS No. 26628-22-8

W.E.L. (Itel / stel)

Hazard Rating: High

OVERALL RISK: Medium

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
1	ml	0.5	Semi Closed	Non-Volatile Liquid	☐ Eyes ☐ Skin ☐ Inhaled ☑ Ingested	Low

Hazard Statement and Description	Precaution Statement and Description
H300 Fatal if swallowed.	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for b
H400 Very toxic to aquatic life.	IF ON SKIN: Wash with soap and water. If irritation persists, seek medical advice.
H410 Very toxic to aquatic life with long lasting effects.	IF SWALLOWED: Rinse mouth and drink plenty of water. In case of discomfort, seek me
EUH032 Contact with acids liberates very toxic gas.	IF IN EYES: Rinse cautiously with water or physiological salt water for at least 15 minute
EUH210 Safety data sheet available on request.	

How will the precautions listed above be implemented?

Gloves, safety glasses, and a labcoat will be worn to avoid any contact.

Special Storage and Containment Measures	Disposal Method
Store in a tightly closed original container in a well-ventilated area. Should not be kept near acids.	Any tissues containing traces of this solution should be disposed as cytotoxic waste using the yellow waste stream. Pipette tips containing traces of this solution should be disposed in purple cytotoxic sharps containers.

How will spillages be dealt with?

Please note: any material used to clean up a spill of hazardous material must also be disposed of as hazardous material.
Click here to see spill procedures

Any spillages are likely to be smaller than 2ml; for a spillage such as this, use an absorbent cloth / tissue to clear up the spillage and dispose of the cloth / tissue using the cytotoxic waste route. After the spillage has been cleaned, also wipe down the area with IMS and a tissue which should also be disposed using the cytotoxic waste route.
In the event of a larger spillage, resulting from the bottle of solution 8 getting knocked over, use a chemical spill kit. Spread the absorbent material in the spill kit over the liquid spill, and using a tissue transfer the absorbent into the disposal bag also provided within the spill kit. Label the bag and contact the lab manager to find out how to dispose of it. Also record the spillage in the Spill Record Log.

+ Add another chemical

COSHH Form (Continued)

Statement of work (Process to be undertaken)

Mitochondrial potential assay using the NucleoCounter® NC-3000™ system

Show image

Personal protection requirements not covered in the precaution statements above.

Shoe covers

Sources of information and references

http://shop.chemometec.com/wp-content/uploads/2015/07/995-0019-SDS-Solution-7-UK-v3.pdf - SDS for solution 7
http://shop.chemometec.com/wp-content/uploads/2015/07/995-0020-SDS-Solution-8-UK-v3.pdf - SDS for solution 8

Reference to **existing approved** Risk Assessment

SAF/MM/6554

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: Karen Coopman — Digitally signed by Karen Coopman Date: 2021.03.26 13:11:32 Z

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MEME/6750	SAF/MEME/6750	SAF/MEME/990 - 992

DSO Signature: Keven G Smith — Digitally signed by Keven G Smith Date: 2021.03.31 16:47:21 +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: 31 Mar 2022

Review comments