Safety Documentation

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

☑ **Method Statement** ☑ **Risk Assessment** ☑ **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	MEME
Originator name	Muhammad Ali Tariq
email address	m.a.tariq@lboro.ac.uk
Location	CBE (H27 Lab)
Project / Activity / Task	Culture, fixation, and counting of Pseudomonas aeruginosa using paraformaldehyde inactivation and flow cytometry
Supervisor Name	Dr Sourav Ghosh

Version : 2.34

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MEME

Safety Method Statement

Reference: SAF-MEME-8873

Location	CBE (H27 Lab)	Originator	Muhammad Ali Tariq
Project / Activity / Task	Culture, fixation, and counting of Pseudomonas aeruginosa using paraformaldehyde inactivation and flow cytometry		

What equipment will be used in this activity?

Class II microbiological safety cabinet (BSC) Pipettes, Vortex, Centrifuge tube, Centrifuge machine

What training must be completed to do this activity?

CL2 procedures and chemical safety

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

Paraformaldehyde Solution (4% in PBS)

Spill and accident procedures.

Stop work; evacuate immediate area if aerosol suspected and allow aerosols to settle.Don appropriate PPE; cover spill with paper towels and apply suitable disinfectant (e.g. 10% bleach).Leave for recommended contact time, then clean up and dispose of materials as biohazard waste.Report incident according to institutional procedures.

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

Skin: wash thoroughly with soap and water.Eyes: rinse immediately with eyewash for at least 10–15 minutes.Report to supervisor and occupational health; complete incident report.

References.

Detailed sequential description of the process

Process step	Precautionary measures and comments
Description of workLive culture work (CL2): Revival from frozen stock and culture in appropriate broth/agarIncubation to mid-log phase. Harvest by centrifugation and wash in PBS Fixation with paraformaldehyde (inactivation step).	Laboratory coatDisposable nitrile gloves (changed regularly and immediately if contaminated)Eye protection where splashes or aerosols may occur
Fixed material work (post-inactivation):Staining with SYTO BC dye. Addition of counting beads. Flow cytometric acquisition and data analysis.	
Containment level: CL2 laboratory; Engineering controls: Class II microbiological safety cabinet (BSC) for all open handling of live cultures, including pipetting, vortexing, and opening centrifuge tubesSealed centrifuge buckets/rotors for spinning live cultures	
Procedural controls:No mouth pipetting; use mechanical pipettes onlyMinimise aerosol generating procedures; open tubes only in the BSC. Clearly label all tubes and plates containing live P. aeruginosa. Decontaminate work surfaces with appropriate disinfectant (e.g. 10% bleach or approved equivalent) before and after work	Standard laboratory PPE (lab coat, gloves)Avoid ingestion and contact with eyes/skin due to residual chemical hazard.

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Inactivation method – paraformaldehyde fixation Fixative: Paraformaldehyde (PFA) in PBS. Final concentration: 2% (v/v)Minimum exposure time: ≥20 minutes at room temperature (typically 20–30 minutes). Standard operating procedure: Grow P. aeruginosa culture to mid-log phase. Transfer culture to centrifuge tubes and centrifuge at 3,000–5,000 × g for 5–10 minutes. Discard supernatant into disinfectant; resuspend pellet in PBS. Add an equal volume of 4% PFA in PBS to achieve 2% final PFA. Incubate for at least 20 minutes at room temperature with gentle mixing. Centrifuge; discard PFA containing supernatant into designated chemical waste. Wash cells 2–3 times with PBS to remove residual PFA. Post-fixation status: After completion of this procedure, the bacterial suspension is considered inactivated for the purposes of microbiological risk and may be handled outside CL2, while still observing good laboratory practice and chemical safety for residual PFA.	PFA is toxic and irritant; all waste containing PFA is collected and disposed of as chemical hazardous waste according to institutional procedures.	x
		x
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Risk Assessment

Reference: SAF-MEME-8873

Location	CBE (H27 Lab)	Originator	Muhammad Ali Tariq
Project / Activity / Task	Culture, fixation, and counting of Pseudomonas aeruginosa using paraformaldehyde inactivation and flow cytometry		

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

Category 1: Machinery & work equipment:

Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards	+
Externally modified	N/A	N/A	N/A	x

Category 2: Workplace	+
Significant vibration	x
Category 3: Hazardous and/or Harmful substances	+
N/A	x
Category 4: Work activity	+
N/A	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
Mild vibrations with the use of min centrifuge machine	Slightly Harmful	Highly Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
Keep the equipment steady and safely on the benchtop	Significantly	Slightly	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

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
Technical Staff	0	1	0	0	0	0	1
Research Staff (PDRA)	0	0	0	0	0	0	0
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	0	0	0	0	3

With these controls in place, the risk is:

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COSHH Form

Reference: SAF 3317

Location: CBE (H27 Lab)

Originator: Muhammad Ali Tariq

Project / Activity / Task: Culture, fixation, and counting of Pseudomonas aeruginosa using paraformaldehyde inactivation and flow cytometry

CHEMICAL NAME

Paraformaldehyde

CAS No. 30525-89-4

W.E.L. (Itel / stel)

Hazard Rating: High

OVERALL RISK: Medium

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

This chemical has a high health risk associated with it.

Hazard Statement and Description	Precaution Statement and Description
H317 May cause an allergic skin reaction.	P280 Wear protective gloves/protective clothing/eye protection/face protection.
H318 Causes serious eye damage.	P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
H351 Suspected of causing cancer.	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remov
	P310 Immediately call a POISON CENTER or doctor/physician.
Justify the use of this chemical:	

How will the precautions listed above be implemented?

Stop work; evacuate immediate area if aerosol suspected and allow aerosols to settle.Don appropriate PPE; cover spill with paper towels and apply suitable disinfectant (e.g. 10% bleach).Leave for recommended contact time, then clean up and dispose of materials as biohazard waste.Report incident according to institutional procedures. Skin: wash thoroughly with soap and water.Eyes: rinse immediately with eyewash for at least 10–15 minutes.Report to supervisor and occupational health; complete incident report. Ensure adequate ventilation. Use personal protective equipment at all times.

Special Storage and Containment Measures	Disposal Method
Keep refrigerated.	Dispose off as hazardous waste.
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
Soak up with inert absorbent material. Keep in suitable, closed	

+ Add another chemical

Statement of work (Process to be undertaken)

Culture, fixation, and counting of Pseudomonas aeruginosa using paraformaldehyde inactivation and flow cytometry

Show image

Personal protection requirements not covered in the precaution statements above.

Sources of information and references

MSDS from Thermo Fisher Scientific

Reference to **existing approved** Risk Assessment

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

COSHH Form (Continued)

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: Sourav Ghosh — Digitally signed by Sourav Ghosh Date: 2026.02.20 14:50:54 Z

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF-MEME-8873	SAF-MEME-8873	SAF 3317

DSO Signature: Kevin Bass — Digitally signed by Kevin Bass Date: 2026.02.20 16:02:56 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: 19 Feb 2027

Review comments