Safety Documentation

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

☑ **Process 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	PRAVEENKUMAR KAVERI
email address	P.Kaveri@lboro.ac.uk
Location	Loughborough University, Wolfson School T 2.08 B
Project / Activity / Task	Biofilm staining
Supervisor Name	Dr. Sourav Ghosh

Version : 2.15

Loughborough University
CENTRE FOR BIOLOGICAL ENGINEERING

Process Risk Assessment

Reference: SAF/MEME/6688

Location: Loughborough University, Wolfson School T 2.08 B

Originator: PRAVEENKUMAR KAVERI

Project / Activity / Task: Biofilm staining

Is this process risk assessment for a : (✓) Laboratory / Workshop ( ) Office

Category 1: Machinery & work equipment:

Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards	+
N/A	N/A	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, toxic, damage to organ substances x

Exposure to Covid-19 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
May cause an allergic skin reaction.	Slightly Harmful	Highly Unlikely	Low

What are the control measures?	Lowers Impact	Lowers Probability	+
Exposure controls Appropriate engineering controls Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Personal protective equipment Eye/face protection Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Skin protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices (see appropriate CBE SOP003 - Decontamination and Disposal of biological waste). Wash and dry hands.	Significantly	Significantly	x

Process Risk Assessment Form (Continued)

			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	Unlikely	Low
What are the control measures?		Lowers Impact	Lowers Probability	+
Ensure that work area is kept clear and tidy. Remove obstacles that may be on the floor. Clean up spills immediately with approved absorbent materials and cleansing products. Dispose of waste safely. Adhere to CBE SOP003 for Cytotoxic waste (yellow purple bags/sharps bin)		Slightly	Moderately	x
			Residual Risk	Low
People / Groups at risk	Operator and people in proximity			x
Enter risk details here:-		Impact	Probability	Risk Score
Electrical test labels current		Very Harmful	Highly Unlikely	Medium
What are the control measures?		Lowers Impact	Lowers Probability	+
Visually inspect electrical cables and connectors for damage or looseness prior to operating equipment Electrical test labels to be within current test inspection date		Slightly	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. Full alb PPE to be worn Frequent washing / sanitizing of hands / gloves to be carried out. Touch points and surfaces to be cleaned / wiped down before and after use. Distancing should be 2 metre, but 1M+ is allowed where all concerned are wearing face coverings: - check current 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

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	0	0	0	0	0	0
Research Staff (PDRA)	1	0	1	0	0	0	2
Research Students (PhD)	1	1	1	0	1	0	4
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	2	1	2	0	1	0	6

◯ **This work involves the use of lasers**

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

Reference: SAF/MEME/6688

Location	Loughborough University, Wolfson School T 2.08 B	Originator	PRAVEENKUMAR KAVERI
Project / Activity / Task	Biofilm staining		

What equipment will be used in this activity?

	+ / x
Tecan F200 Microplate reader	x
Microplate Shaking instrument	x

What training must be completed to do this activity?

	+ / x
Aseptic technique training has been completed.	x

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

	+ / x
Crystal Violet	x

Spill and accident procedures.

	+ / x
Personal precautions, protective equipment and emergency procedures. Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Environmental precautions. Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Methods and materials for containment and cleaning up. Contain spillage, by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. REMEMBER TO ADHERE TO CBE SOP FOR CYTOTOXIC WASTE (yellow purple bags/sharps bins)	x

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

	+ / x
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.	x

References.

	+ / x
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 Version 5.3 Revision Date 19.06.2015 Print Date 28.06.2019 CBE SOP003 - Decontamination and Disposal of biological waste	x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Ob1. To grow biofilm in microtitre plates 1. Streak frozen bacterial stock on Luria broth (LB) agar plate 2. Grow overnight 3. Dilute the overnight culture 1:100 into fresh medium for biofilm assays. 4. Add100 µL of the dilution per well in a 96 well dish 5. For quantitative assays, use 4-8 replicate wells for each treatment. 6. Incubate the microtiter plate for 4 -24 hrs. at 37°C Ob2. Evaluate or quantify the biofilm using colorimetric dye (visual observation) 1. After incubation, dump out cells by turning the plate over and shaking out the liquid. 2. Gently submerge the plate in a small tub of water; Shake out water. 3. Repeat this process 4. Add125 µL of a 0.1% solution of crystal violet in water to each well of the microtiter plate. 5. Incubate the microtiter plate at room temperature for 10-15 min. 6. Rinse the plate 3-4 times with water by submerging in a tub of water. 7. Shake out and blot vigorously on a stack of paper towels to rid the plate of all excess cells and dye. 8. Turn the microtiter plate upside down and dry for a few hours or overnight. 9. Photograph the wells when dry for qualitative assays. 10. Add125µL of 30% acetic acid in water to each well of the microtiter plate to solubilize the CV. 11. Incubate the microtiter plate at room temperature for 10-15 min. 12. Transfer 125µL of the solubilized CV to a new flat-bottomed microtiter dish. 13. Quantify fluoroscence in a plate reader at 550 nm using 30% acetic acid in water as the blank. Ob3. Treatment of biofilm using various enzymes to understand the suitable enzyme with higher biofilm degradation ability 1. Add 100 µL of enzyme to the biofilm microwell and wait for 30 min. Ob4. Evaluate or quantify the bioflim using fluorescence aptamer probe 1. Collect the planktonic bacteria solution (100µL) from the microwell into an eppendorf tube. 2. Add pre-heated (95°C)1 µM of Aptamer fluoroscence probe solution to the eppendorf tube. 3. Read the fluorescence of the sample loading in to the microplate after 60 mins. 4. Microplate reader Excitation at 485 nm and Emission at 520 nm. Decontamination procedure 1. After each experiment the culture flask, buffers and the microplates will be treated with 1% virkon solution for 24 hours, and disposed off through the sink. 2. For biofilm formed microplates the plates will be autoclaved before the disposal.	Wear full protective equipment. Keep unprotected persons away.	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: Sourav Ghosh — Digitally signed by Sourav Ghosh Date: 2020.12.10 11:14:37 Z

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MEME/6688	SAF/MEME/6688	

DSO Signature: Keven G Smith — Digitally signed by Keven G Smith Date: 2021.02.05 16:15:22 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: 5 Feb 2022

Review comments