

## 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	ELISA and Antibiotic susceptibility testing
Supervisor Name	Dr. Sourav Ghosh

### Process Risk Assessment

Reference

Location  Originator

Project / Activity / Task

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

Category 1: Machinery & work equipment:				
Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards	
<input type="text" value="N/A"/>	<input type="text" value="N/A"/>	<input type="text" value="Electrical test labels current"/>	<input type="text" value="N/A"/>	+
				+
<input type="text" value="N/A"/>				+
				+
<input type="text" value="Irritant substances"/>				+
				+
<input type="text" value="N/A"/>				+
				+
<input type="text" value="N/A"/>				+
				+
<input type="text" value="N/A"/>				+
				+

#### Explain the risks associated with these hazards

People / Groups at risk	<input type="text" value="Operator only"/>			+
Enter risk details here:-	Impact	Probability	Risk Score	
<input type="text" value="May cause an allergic skin reaction."/>	<input type="text" value="Slightly Harmful"/>	<input type="text" value="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. Wash and dry hands.	Significantly	Significantly	+	

## Process Risk Assessment Form (Continued)

	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	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
<b>Total</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>

**This work involves the use of lasers**

With these controls in place, the risk is:

**The activity is LOW RISK - and is effectively controlled**

### Safety Method Statement

Reference CBE/136

Location Loughborough University, Wolfson School T 2.08 B      Originator PRAVEENKUMAR KAVERI

Project / Activity / Task ELISA and Antibiotic susceptibility testing

What equipment will be used in this activity? +

Tecan F200 Microplate reader	X
Microplate Shaking instrument	X

What training must be completed to do this activity? +

Aseptic technique training has been completed.	X
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What chemicals are being used? (These must be included in the COSHH Form) +

Ampicillin, Amoxicillin	X
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Spill and accident procedures. +

<p>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.</p> <p>Environmental precautions                  Prevent further leakage or spillage if safe to do so. Do not let product enter drains.</p> <p>Methods and materials for containment and cleaning up                  Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.</p>	X
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Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event) +

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
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References. +

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 Version 5.3 Revision Date 19.06.2015 Print Date 28.06.2019	X
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### Detailed sequential description of the process

Process step	Precautionary measures and comments	+
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## Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
<p>Ampicillin is an antibiotic and will be used in LB agar for the culture and selection of genetically modified E. coli XL2 Blue cells (CBE/GMO/099). Method of preparation and use: the product is supplied as a 10mL solution at 100mg/mL concentration. In a ducted BSC the product will be diluted with sterile distilled water 10-fold to 10mg/ml and subsequent 5ml aliquots in sterile 15ml centrifuge tubes prepared. All aliquots will be labelled with the contents, hazards, preparation and expiry dates. Aliquots will be stored in secondary containment in the H29 freezer at -20°C. For preparation of LB-Ampicillin agar (100ug/ml), one aliquot will be defrosted overnight in the H29 fridge (2-8°C). 500mL of LB agar will be prepared, autoclaved and cooled to approximately 55°C. In a ducted BSC, 5ml of 10mg/ml sterile ampicillin solution will then be added to the agar and swirled to mix. The agar will be immediately poured into petri dishes and allowed to set. Set agar plates will be placed in secondary containment and stored at 2-8°C in the H29 fridge. The plates will be labelled as LB-Ampicillin-100ug/ml with preparation and expiry dates (2 weeks from preparation date). When required for culture, LB-Ampicillin agar plates will be removed from the fridge and allowed to reach room temperature in the H29 BSC, depending on the application either a single colony of E.coli is picked using a sterile disposable loop and streaked across the agar surface, or up to 200µL of E. coli broth culture is pipetted onto the agar surface and spread across the agar using a sterile disposable spreader. The plates are incubated at 37°C overnight after which time the cells are re-plated onto fresh medium with or without ampicillin (application dependent). In some instances where blue-white colour select reagent (non-hazardous) is used to assign a colour to colonies of interest, the plates may be further incubated at 2-8°C in the H29 fridge for 2h to enhance colour development before re-plating selected colonies onto fresh medium. In some instances cultured plates may be stored at 2-8°C in the H29 fridge for up to 7 days while awaiting further test results for that culture. All cultures stored at 2-8°C, whether for 2h colour development or longer term storage will be placed in secondary containment and further labelled with the culture details and date for disposal. After use, all agar plates are double bagged using autoclave bags, loosely sealed with autoclave indicator tape (to allow steam penetration) and placed in a leak-proof metal bucket for autoclaving before being disposed of via the orange waste stream as solid waste.</p>	<p>Wear protective equipment. Keep unprotected persons away.</p>	<p>X</p>


### COSHH Form

Reference

Location


Originator

Project / Activity / Task

<b>CHEMICAL NAME</b>						Hazard Rating <input type="text" value="High"/> Exposure Potential <input type="text" value="Low"/>		OVERALL RISK: <input type="text" value="Medium"/>
<input type="text" value="Ampicillin"/>	CAS No. <input type="text" value="69-53-4"/>	Amount used <input type="text" value="0.000001"/> <input type="text" value="g"/>	Period of use (hrs) <input type="text" value="0"/>	The process is: <input type="text" value="Semi Closed"/>	Physical State <input type="text" value="Dense Solid"/>	<input type="checkbox"/> Eyes	<input checked="" type="checkbox"/> Skin	OVERALL RISK: <input type="text" value="Medium"/>
W.E.L. (Itel / stel) <input type="text" value="Less than 1g"/>						<input checked="" type="checkbox"/> Inhaled	<input type="checkbox"/> Ingested	

This chemical has a high health risk associated with it.

Hazard Statement and Description	Precaution Statement and Description	+
<input type="text" value="H317 May cause an allergic skin reaction."/>	<input type="text" value="P261 Avoid breathing dust/fume/gas/mist/vapours/spray."/>	X
<input type="text" value="H317 May cause an allergic skin reaction."/>	<input type="text" value="P280 Wear protective gloves/protective clothing/eye protection/face protection."/>	X
<input type="text" value="H317 May cause an allergic skin reaction."/>	<input type="text" value="P342 If experiencing respiratory symptoms:"/>	X
<input type="text" value="H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled."/>	<input type="text" value="P311 Call a POISON CENTER or doctor/physician."/>	X
Justify the use of this chemical:		
How will the precautions listed above be implemented?		
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.		
Special Storage and Containment Measures	Disposal Method	+
<input type="text" value="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. Recommended storage temperature -20 °C"/>	<input type="text" value="Aqueous waste - Check with Technician or Supervisor"/>	X
How will spillages be dealt with?		
Spill kit		

<b>CHEMICAL NAME</b>						Hazard Rating <input type="text" value="High"/> Exposure Potential <input type="text" value="Low"/>		OVERALL RISK: <input type="text" value="Medium"/>
<input type="text" value="Amoxicillin"/>	CAS No. <input type="text" value="26787-78-0"/>	Amount used <input type="text" value="0.000001"/> <input type="text" value="g"/>	Period of use (hrs) <input type="text" value="0"/>	The process is: <input type="text" value="Semi Closed"/>	Physical State <input type="text" value="Non-Volatile Liquid"/>	<input type="checkbox"/> Eyes	<input checked="" type="checkbox"/> Skin	OVERALL RISK: <input type="text" value="Medium"/>
W.E.L. (Itel / stel) <input type="text" value="Less than 1g"/>						<input checked="" type="checkbox"/> Inhaled	<input type="checkbox"/> Ingested	

This chemical has a high health risk associated with it.


Hazard Statement and Description	Precaution Statement and Description	+
<input type="text" value="H317 May cause an allergic skin reaction."/>	<input type="text" value="P261 Avoid breathing dust/fume/gas/mist/vapours/spray."/>	X
<input type="text" value="H317 May cause an allergic skin reaction."/>	<input type="text" value="P280 Wear protective gloves/protective clothing/eye protection/face protection."/>	X

# COSHH Form (Continued)

H317 May cause an allergic skin reaction.	P342 If experiencing respiratory symptoms:	X
H334 May cause allergy or asthma symptoms or breathing difficulties i	P311 Call a POISON CENTER or doctor/physician.	X
Justify the use of this chemical:		
How will the precautions listed above be implemented?		
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.		
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. Recommended storage temperature -20 °C	Aqueous waste - Check with Technician or Supervisor	X
How will spillages be dealt with?		
Spill kit		

+ Add another chemical

## Statement of work (Process to be undertaken)

Amoxicillin is an antibiotic and will be used in LB agar for the culture and selection of genetically modified E. coli XL2 Blue cell 

Personal protection requirements not covered in the precaution statements above.

<p>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).</p> <p>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. Wash and dry hands.</p>
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## Sources of information and references

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006  
Version 5.3 Revision Date 19.06.2015  
Print Date 28.06.2019

## Reference to **existing approved** Risk Assessment

Biological 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

### Form Reference Numbers

Risk Assessment

CBE/136

Method Statement

CBE/136

COSHH Assessment

CBE 322-

DSO Signature

### **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:

04/09/2020

Review comments