

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 [-] 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	H34, Centre for Biological Engineering
Project / Activity / Task	Use and maintenance of Guava easyCyte 8HT benchtop flow cytometer
Supervisor Name	Dr Karen Coopman

Risk Assessment

Reference

Location

Originator

Project / Activity / Task

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	Crushing	Direct contact	Lasers	+
		Electrical test cables current		+
Category 2: Workplace				
N/A				+
Category 3: Hazardous and/or Harmful substances				
Hazardous substances - ICF - refer to COSHH below				+
Biological substance (Infection) - use of cells				+
Corrosive substances - sodium hypochlorite solution - refer to COSHH below				+
Category 4: Work activity				
N/A				+
Category 5: Work organisation				
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="Laser radiation"/>	<input type="text" value="Very Harmful"/>	<input type="text" value="Highly Unlikely"/>	Medium	
What are the control measures?	Lowers Impact	Lowers Probability	+	
<input type="text" value="Internal maintenance will not be performed by the user"/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
<input type="text" value="Direct eye exposure to the laser will be avoided"/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
<input type="text" value="There are light shields built in to the cytometer to prevent exposure"/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
			Residual Risk	
			<input type="text" value="Low"/>	
People / Groups at risk	<input type="text" value="Operator only"/>			+

Process Risk Assessment Form (Continued)

Enter risk details here:- Possibility of electrical shock	Impact Very Harmful	Probability Highly Unlikely	Risk Score Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
Instrument will be turned off before attempting to remove the flow cell Visual inspection of electrical cables and connectors before use Ensure where PAT testing is required the equipment is within current inspection date	Significantly	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator only		x
Enter risk details here:- Moving parts can result in crushing/pinching of hands	Impact Harmful	Probability Highly Unlikely	Risk Score Low
What are the control measures?	Lowers Impact	Lowers Probability	+
When opening the sample tray, the 'Eject Tray' button in the guavaSoft Software will be used - fingers will never be used to open the tray	Significantly	Significantly	x
The area in front of the tray will be kept clear when opening	Significantly	Significantly	x
Users will have received training before using the equipment	Significantly	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator and people in proximity		x
Enter risk details here:- Biological material (cells) transmitting infection	Impact Very Harmful	Probability Highly Unlikely	Risk Score Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
Suitable PPE including gloves/lab coats will be worn	Significantly	Significantly	x
All waste will be disposed appropriately as per SOP003	Significantly	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator and people in proximity		x
Enter risk details here:- Exposure to hazardous/corrosive substances	Impact Harmful	Probability Unlikely	Risk Score Medium
What are the control measures?	Lowers Impact	Lowers Probability	+
A COSHH Risk Assessment will be done for each hazardous chemical and preventative action identified - refer to COSHH below	Significantly	Significantly	x
Users are trained on how to work with chemicals safely including dealing with spills	Significantly	Significantly	x
Users will use appropriate PPE as per COSHH Risk Assessment	Significantly	Significantly	x

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	1	1	0	1	0	0	3
Research Staff (PDRA)	1	1	0	1	0	0	3
Research Students (PhD)	1	1	0	1	0	0	3
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	3	3	0	3	0	0	9

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

Reference SAF/MEME/6698

Location H34, Centre for Biological Engineering Originator Nishant Joglekar

Project / Activity / Task Use and maintenance of Guava easyCyte 8HT benchtop flow cytometer

What equipment will be used in this activity?	+
Guava easyCyte 8HT benchtop flow cytometer	X

What training must be completed to do this activity?	+
Standard lab induction training	X
Guava easyCyte 8HT benchtop flow cytometer training	X

What chemicals are being used? (These must be included in the COSHH Form)	+
Guava Instrument Cleaning Fluid (ICF) - see COSHH below	X
Sodium hypochlorite solution (bleach) - see COSHH below - the bleach will be further diluted before use	X
Guava easyCheck Bead Reagent - part of Guava easyCheck kit - non hazardous as provided	X
Guava Check diluent - part of Guava easyCheck kit - non hazardous as provided	X

Spill and accident procedures.	+
In the event of a large spillage of more than 10ml resulting from the cleaning vial containing ICF, or the waste vial 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.	X
In the event of a small spillage smaller than 10ml, 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.	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 flow cytometer 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.	+
https://www.merckmillipore.com/GB/en/product/msds/MM_NF-4200-0140 - SDS for ICF	X
https://www.fishersci.co.uk/store/msds?partNumber=11448842&productDescription=2.5LT+Sodium+hypochlorite%2C+technical%2C+solution&countryCode=GB&language=en - SDS for sodium hyperchlorite (bleach)	X
https://www.merckmillipore.com/GB/en/product/msds/MM_NF-4500-0025 - SDS for Guava easyCheck kit	X
SOP039, SOP003	X
CBE/246	X
SOP138	X
https://www.umces.edu/sites/default/files/guava-easycyte-ht-system-user-s-guide.pdf	X

Detailed sequential description of the process

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Initially turn on laptop and Guava easyCyte system and open the guavaSoft Software.	N/A	X
Initially, prepare all reagents with a 1:10 solution of bleach and a 1:20 dilution of Guava easyCheck Bead Reagent required - refer to Guava easyCyte HT system user guide for details.	Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
Fill the cleaning vial with ICF up to half (vial should not be allowed to go dry) and add 10ml diluted bleach to the waste vial - refer to Guava easyCyte HT system user guide / SOP138 for details.	Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
At the beginning of each day, run a 'Quick Clean' cycle to prime the fluid system, run two Quick Clean cycles if not used for more than a day - refer to Guava easyCyte HT system user guide / SOP138 for details on how to perform the Quick Clean cycle. If the flow cytometer is not being used immediately, perform the 'Capillary Shutdown' procedure - refer to Guava easyCyte HT system user guide / SOP138 for details. Use fresh tubes filled with water/ICF/bleach for cleaning each day. Also run a 'quick clean' cycle followed by the Capillary Shutdown procedure between assays.	Open the tray using the software, do not use hands. Clear the space in front of tray when opening. Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
If the fluid pathway seems blocked, perform the backflush procedure by clicking the 'Backflush' button located on the screen - refer to Guava easyCyte HT system user guide / SOP138 for details on how to perform the backflush procedure (this procedure reverses the flow of the fluid out of the flow cell). When the backflush procedure has completed, perform a 'quick clean' cycle to rinse the bleach from the capillary.	Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
At the beginning of each day (when system is being used), once the 'quick clean' procedure has been completed, run the easyCheck procedure - refer to Guava easyCyte HT system user guide / SOP138 for details on how to perform the easyCheck procedure. Briefly, select 'easyCheck' on main menu and after the system has warmed up, load each tube/microplate well as given in the manual/SOP and run the procedure. Ensure that the displayed results are within the accepted range as per the reference card supplied in the easyCheck kit. If the values are outside the range, repeat 'quick clean' and rerun the easyCheck procedure. Refer to the 'easyCheck troubleshooting' section of the manual if the issue persists. If the problem cannot be resolved, get in contact with the technical support team.	Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
At the end of each day, run the cleaning cycle 'Guava Clean' twice - refer to Guava easyCyte HT system user guide / SOP138 for details on how to perform the Guava Clean routine. Briefly, click the 'Cleaning' option in the main menu, click 'Start Clean', and load distilled water / bleach / ICF in the tubes as appropriate. Then, click 'OK'.	Open the tray using the software, do not use hands. Clear the space in front of tray when opening. Wear appropriate PPE including gloves, safety glasses, and a lab coat.	X
Once the 'Guava Clean' procedure has been completed, eject the tray and dispose of any used plates/tubes. Then perform the 'Capillary Shutdown' procedure - refer to Guava easyCyte HT system user guide / SOP138 for details on how to perform the Capillary Shutdown procedure. Once completed, click 'Exit' to close down the guavaSoft software.	Wear appropriate PPE including gloves, safety glasses, and a lab coat. Never switch off the system without performing the Capillary Shutdown procedure. Do not reuse old tools/plates.	X

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
<p>At the end of the day, once the Guava Clean and Capillary Shutdown procedures have been completed, empty the waste vial - if the vial does not contain any cytotoxic chemicals, the contents of the vial can be put down the sink with copious amounts of water. If there are cytotoxic chemicals present, empty the contents of the vial into a beaker and dispose the waste using the cytotoxic waste route. Once the vial has been emptied, rinse with water, and refill with 10ml diluted bleach solution. Replace the cap, and attach it back to the flow cytometer - refer to Guava easyCyte HT system user guide / SOP138 for details.</p>	<p>Open the tray using the software, do not use hands. Clear the space in front of tray when opening.</p> <p>Wear appropriate PPE including gloves, safety glasses, and a lab coat.</p> <p>Make sure cytotoxic chemicals are not being put down the sink.</p>	<p>X</p>
<p>When the flow cytometer is not in use, the flow cell should be removed and cleaned - refer to Guava easyCyte HT system user guide for details on how to remove and clean the flow cell. Use the syringe cleaning tool to clean the flow cell assembly. If damaged/ clogged, flow cell can be replaced - refer to Guava easyCyte HT system user guide for details on how to rreplace the flow cell.</p>	<p>Make sure the power to the flow cytometer is off before removing the flow cell to avoid exposure to laser radiation.</p> <p>When handling the flow cell assembly, grasp it towards the top of the shuttle, where the minstac tubing is attached to avoid getting fingerprints on the optics window.</p> <p>Avoid touching the micro capillary unnecessarily as this is fragile.</p> <p>Wear gloves and a lab coat.</p>	<p>X</p>


COSHH Form

Reference SAF/MEME/940, 941

Location H34, Centre for Biological Engineering



Originator Nishant Joglekar

Project / Activity / Task Use and maintenance of Guava easyCyte 8HT benchtop flow cytometer

CHEMICAL NAME Guava Instrument Cleaning Fluid (ICF)				Hazard Rating High		OVERALL RISK: Medium
CAS No. 1310-58-3	Amount used 10 ml			Period of use (hrs) 5	The process is: Open	
W.E.L. (Itel / stel) N/A					<input checked="" type="checkbox"/> Eyes <input checked="" type="checkbox"/> Skin <input type="checkbox"/> Inhaled <input type="checkbox"/> Ingested	

Hazard Statement and Description	Precaution Statement and Description	
H315 Causes skin irritation.	P302 + P352 IF ON SKIN: Wash with plenty of soap and water.	X
H319 Causes serious eye irritation.	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove	X
How will the precautions listed above be implemented?		
Appropriate PPE will be worn at all times, including gloves, safety glasses and a lab coat. In case of skin contact, all contaminated clothing will be removed and skin will be rinsed with plenty of water. In case of eye contact, eyes will be rinsed out with plenty of water and an ophthalmologist will be consulted.		
Special Storage and Containment Measures	Disposal Method	
ICF bottle to be stored in poisons cabinet	For small amounts generated after use, dispose of into the sink with copious amount of water. Offer surplus and non-recyclable solutions to a licensed disposal company.	X
Container to be kept tightly closed		X
How will spillages be dealt with?	<i>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</i>	

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Use chemical spill kit and dispose of as cytotoxic waste.

CHEMICAL NAME Sodium hypochlorite solution						Hazard Rating High		OVERALL RISK: Medium
CAS No. 7681-52-9	Amount used 1.2 ml					Period of use (hrs) 5	The process is: Open	
W.E.L. (Itel / stel)					<input checked="" type="checkbox"/> Eyes <input checked="" type="checkbox"/> Skin <input type="checkbox"/> Inhaled <input type="checkbox"/> Ingested			

Hazard Statement and Description	Precaution Statement and Description	
H290 May be corrosive to metals.	P280 Wear protective gloves/protective clothing/eye protection/face protection.	X
H314 Causes severe skin burns and eye damage.	P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.	X
H318 Causes serious eye damage.	P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminate	X
H400 Very toxic to aquatic life.	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove	X

COSHH Form (Continued)

H411 Toxic to aquatic life with long lasting effects.	P310 Immediately call a POISON CENTER or doctor/physician.	X
EUH031 Contact with acids liberates toxic gas.		X
How will the precautions listed above be implemented?		
Appropriate PPE will be worn including gloves, safety glasses and a lab coat		
Special Storage and Containment Measures	Disposal Method	
Protect from direct sunlight	Sodium hypochlorite solution (bleach) will be diluted and only small amounts will be used. The waste vial containing small amounts of diluted bleach can be emptied down the sink with copious amounts of water. If the waste vial also contains residues of cytotoxic chemicals/dyes, the waste vial will need to be emptied into a beaker and the liquid discarded using the cytotoxic waste route.	X
Keep container tightly shut		X
Do not store in a metal container		X
Refrigerate for best quality		X
How will spillages be dealt with?	<i>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</i>	
Any small spillages will be cleaned up using an absorbent cloth / tissue which will be discarded down the yellow stream waste. IMS will then be sprayed on the spill area and will be cleaned up using an absorbent cloth / tissue which will also be discarded down the yellow stream waste.		

+ Add another chemical

Statement of work (Process to be undertaken)

Use and Maintenance + Cleaning of Guava easyCyte 8HT benchtop flow cytometer

Show Image

Personal protection requirements not covered in the precaution statements above.

Shoe covers to be worn at all times as part of standard lab practice at the CBE

Sources of information and references

https://www.merckmillipore.com/GB/en/product/msds/MM_NF-4200-0140-SDS-for-ICF
<https://www.fishersci.co.uk/store/msds?partNumber=11448842&productDescription=2.5LT+Sodium+hypochlorite%2C+technical%2C+solution&countryCode=GB&language=en> - SDS for sodium hyperchlorite (bleach)
https://www.merckmillipore.com/GB/en/product/msds/MM_NF-4500-0025-SDS-for-Guava-easyCheck-kit
 SOP039
 SOP138
<https://www.umces.edu/sites/default/files/guava-easycyte-ht-system-user-s-guide.pdf>

Reference to **existing approved** Risk Assessment

CBE/246 - existing COSHH for ICF

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

SAF/MEME/6698

Method Statement

SAF/MEME/6698

COSHH Assessment

SAF/MEME/940, 941

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:

25 Feb 2022

Review comments