



Loughborough
University

Wolfson School



Overview

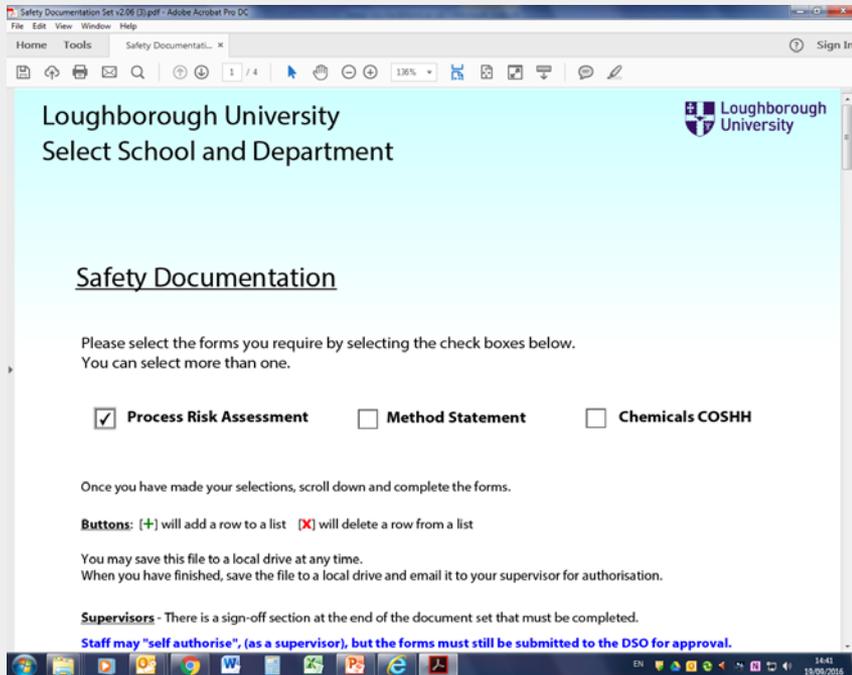
- Why do we need to carry out a Risk Assessment?
- How to use the new forms part 1: Risk Assessment
- Why do we need to carry out a CoSHH Assessment?
- How to use the new forms Part 2: CoSHH Assessment
- Why do we need to write a Method Statement?
- How to use the new forms Part 3 : Method Statement
- Conclusion
- Questions?



Why do we need to carry out a Risk Assessment?

- It is a legal requirement that any organisation with 5 or more employees should carry out risk assessments and record the significant findings of those assessments.
- To look at the work you're doing and think about what could be harmful to you or others around you, and how you could make it safer.
- To prevent accidents and keep everyone safe – no-one should be injured or become ill through the work they do for the University.

How to use the new Safety Documentation – Part 1: Risk Assessment



- Open the Safety Documentation and choose the type of document you are going to write.
- “Process Risk Assessment”

How to use the new Safety Documentation – Part 1: Risk Assessment

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

Department: School of AACME - Department of Materials

Name: Sarah Fay

email address: s.fay@lboro.ac.uk

Version: 2.06

Originator Sarah Fay

19-Sep-2016

Page 0 of 3

- Choose your department from the drop down menu, enter your name and email address.
- If you cannot enter your name, this is due to the plagiarism protection element written into the programme – download a new version from LEARN to correct the issue.

Originator will now automatically update for each page

How to use the new Safety Documentation – Part 1: Risk Assessment

Yichen DONG Safety Documentation Set v2.04.pdf - Adobe Acrobat Pro DC

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Loughborough University
School of AACME - Department of Materials

Process Risk Assessment

Reference: 16/A/C/SR4/0007

Originator: Yichen DONG

Activity / Task: Preparation of hybrid organic-inorganic geopolymers

What are the hazards associated with this process?

Category 1: Machinery & work equipment:			
Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards
N/A	Shearing	Electrical test labels current	N/A
Category 2: Workplace			
Localised hot surfaces			
Category 3: Hazardous and/or Harmful substances			
Corrosive substances			
Cancer causing substances			
Irritant substances			
Toxic Substances			

Use the Green + to add rows or red X to delete rows

- Reference will be filled in by the DSO at the sign off stage – leave blank.
- Originator will be automatically filled to match the name entered on the front page.
- Type the Activity/Task details.
- Choose the hazards present in your process by selecting from the drop down menus.
- Use your Material Safety Data Sheet (MSDS) to identify the chemical hazards (More details will be added to the CoSHH form later)
- If there are no chemical hazards a COSHH is not needed.

How to use the new Safety Documentation – Part 1: Risk Assessment

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Category 4: Work activity
N/A

Category 5: Work organisation
N/A

What are the risks associated with these hazards?

People / Groups at risk	Impact	Probability	Risk Score
Operator only	Slightly Harmful	Highly Unlikely	Low
What are the control measures?			
Will be trained to be safe by a supervisor before normal use.	Significantly	Significantly	Low
Overall Risk			
Operator only	Harmful	Highly Unlikely	Low
What are the control measures?			
Check label is valid and in date	Significantly	Significantly	Low
Overall Risk			
Operator and people in proximity			

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The Overall Risk Rating changes based on how the control measures lower the impact and probability.

- Continue to choose hazards from the drop down menus.
- Next step is to apply a risk rating for the hazards. The programme will calculate this automatically based on your answers – the “Overall Risk” will go up or down based on the Impact and Probability.
- These are subjective and may need to be discussed with your supervisor to reach an agreement.

How to use the new Safety Documentation – Part 1: Risk Assessment

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+ 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	1	0	0	0	1
Technical Staff	2	0	0	0	0	0	2
Research Staff (PDRA)	0	0	0	0	0	0	0
Research Students (PhD)	1	0	0	0	0	0	1
Students (Undergraduate / MSc)	0	0	0	4	0	0	4

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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
Visitors	0	0	0	0	0	0	0
Others - Over-type as needed	0	0	0	0	0	0	0

- Who is at risk?
- Enter the numbers of people only.
- In this case, two technicians are setting up the process with input from a PhD student. One academic is observing and there are four MSc's also working in this lab on another project. There are no visitors or other people in the area.

How to use the new Safety Documentation – Part 1: Risk Assessment

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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
Visitors	0	0	0	0	0	0	0
Others - Over-type as needed	0	0	0	0	0	0	0
Total	3	0	1	4	0	0	8

With these controls in place, the risk is:
The activity is LOW RISK - and is effectively controlled

- The form will automatically rate the activity as LOW, MEDIUM or HIGH Risk and will state if it is adequately controlled or if more controls are required.



Why do we need to carry out a CoSHH Assessment?

- As an extension of the risk assessment – so it is still a legal requirement.
- **COSHH - Control of Substances Hazardous to Health**
- To prevent or limit harm to people caused by chemicals.
- COSHH covers substances that are hazardous to health. Substances can take many forms and include:
 - **chemicals**
 - **products containing chemicals**
 - **fumes**
 - **dusts**
 - **vapours**
 - **mists**
 - **nanotechnology**
 - **gases** and **asphyxiating gases** and
 - **biological agents** (germs). If the packaging has any of the hazard symbols then it is classed as a hazardous substance.

How to use the new Safety Documentation – Part 2: CoSHH Assessment

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Loughborough University
School of AACME - Department of Materials
COSHH Form

Reference: 16/A/C/SR4/0007a
Originator: Yichen DONG

Area / Process / Project: Preparation of hybrid organic-inorganic geopolymers

Data (Insert data from data sheet or other source)		RISK RATING	
CHEMICAL NAME Phloroglucinol		Hazard Rating Low	OVERALL RISK: Low
CAS No. 108-73-6 W.E.L. (litel / stel)	Amount used: 100 g Period of use (hrs): 2 The process is: Semi Closed Physical State: Dusty Solid	Exposure Potential Low	
Hazard Statement and Description	Precaution Statement and Description		
H315 Causes skin irritation.	P261 Avoid breathing dust/fume/gas/mist/vapours/spray.		
H317 May cause an allergic skin reaction.	P264 Wash ... thoroughly after handling.		
H319 Causes serious eye irritation.	P271 Use only outdoors or in a well-ventilated area.		
H335 May cause respiratory irritation.	P272 Contaminated work clothing should not be allowed out of the workplace.		

- Reference will be filled in by the DSO at the sign off stage – leave blank.
- Originator will be automatically filled to match the name entered on the front page.
- Chemical details should be entered from the Material Safety Data Sheet (MSDS)
- Quantity used should be known from your method.
- Skin/eyes etc. and GHS symbol are generated automatically based on H and P phrases
- The Risk Rating is calculated automatically using your entries.

Use the Green + to add rows or red X to delete rows

How to use the new Safety Documentation – Part 2: CoSHH Assessment

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COSHH Form (Continued)

CHEMICAL NAME
Formaldehyde solution

CAS No. 50-00-0

Amount used 100 g

Period of use (h) 2

The process is: Semi Closed

Physical State: Highly Volatile Liquid

Hazard Rating: Low

Exposure Potential: Medium

OVERALL RISK: Low

Consider using a closed system process

Hazard Statement and Description	Precaution Statement and Description
H317 May cause an allergic skin reaction.	P201 Obtain special instructions before use.
H341 Suspected of causing genetic defects.	P202 Do not handle until all safety precautions have been read and understood.
H350 May cause cancer.	P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
H370 Causes damage to organs.	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
	P264 Wash ... thoroughly after handling.
	P270 Do not eat, drink or smoke when using this product.
	P271 Use only outdoors or in a well-ventilated area.
	P272 Contaminated work clothing should not be allowed out of the workplace.
	P273 Avoid release to the environment.
	P280 Wear protective gloves/protective clothing/eye protection/face protection.

- For very hazardous (e.g. suspected carcinogen or mutagen) further prompts may appear. These will help lower the risk if they are followed.

How to use the new Safety Documentation – Part 2: CoSHH Assessment

	P280 Wear protective gloves/protective clothing/eye protection/face protection.	X
	P302 + P352 IF ON SKIN: Wash with plenty of soap and water.	X
	P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position com	X
	P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remov	X
	P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.	X
	P337 + P313 If eye irritation persists: Get medical advice/attention.	X
	P362 Take off contaminated clothing and wash before reuse.	X
	P403 + P233 Store in a well-ventilated place. Keep container tightly closed	X
	P405 Store locked up.	X
	P501 Dispose of contents/container to ...	X
How will the precautions listed above be implemented?		
Wear PPE all the time in the lab, work in the fume hood whenever is possible		
Special Storage and Containment Measures	Disposal Method	+
Stored in hazardous cabinet in GE002	Hydrophylic organic solvent waste	X
How will spillages be dealt with?		
Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.		

- Fill in manually the details from the MSDS about how you will implement precautions, any special storage or containment measures (e.g. storage at or below certain temperatures or in the dark) disposal method and spill procedure.

How to use the new Safety Documentation – Part 2: CoSHH Assessment

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Signature Panel

Stored in hazardous cabinet in GE002, and labeled as corrosive material Hydrophylic organic solvent waste

How will spillages be dealt with?

Spill kit

+ Add another chemical

Statement of work (Process to be undertaken)

Phenol, resorcinol and phloroglucinol, glutaric dialdehyde solution and formaldehyde solution are used to produce thermosetting resins. NaOH is used to provide alkaline condition. Fly ash and sodium silicate solution is used to produce geopolymers.

Show image

Personal protection requirements not covered in the precaution statements above.

Nitrile gloves
Safety glasses
Lab coat

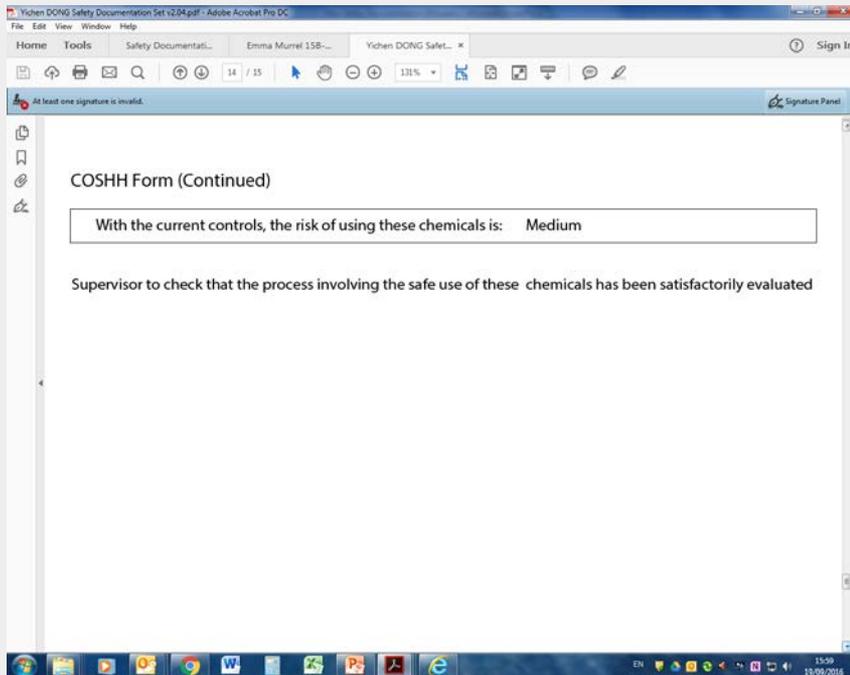
Sources of information and references

SDS
Cement and Concrete Composites, Volume 59, May 2015, Pages 89-99

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- Use the “Add another chemical” button and repeat until all your chemicals are recorded.
- Add a “Statement of Work” or attach a file (e.g. word document, chemical reaction mechanism diagram) by using the button at the right.
- If there is additional PPE, enter this in the free text field.
- Add any sources of data e.g. which supplier the SDS is from

How to use the new Safety Documentation – Part 2: CoSHH Assessment



- The programme will automatically assess the risk and give an overall risk rating based on the hazards and control measures, and will give any recommended actions such as for the Supervisor to check the process.

Why do we need to write a Method Statement?

- A work **method statement**, sometimes called a "safe system of work", is a document that details the way a work task or process is to be completed. The **method statement** should outline the hazards involved and include a step by step guide on how to do the job safely.

How to use the new Safety Documentation – Part 3: Method Statement

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Loughborough University
School of AACME - Department of Materials

Safety Method Statement

Reference 16/A/C/SR4/0007

Originator Yichen DONG

Activity Preparation of hybrid organic-inorganic geopolymers

What equipment will be used in this activity?

Fourier Transform Infrared Spectroscopy	+
Scanning Electron Microscope	X
X-ray Diffraction	X
Differential Scanning Calorimetry	X
Mechanical mixer	X
Thermogravimetric Analysis	X

What training must be completed to do this activity?

X-ray Diffraction	+
Differential Scanning Calorimetry	X
Mechanical mixer	X
Thermogravimetric Analysis	X

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

Use the Green + to add rows or red X to delete rows

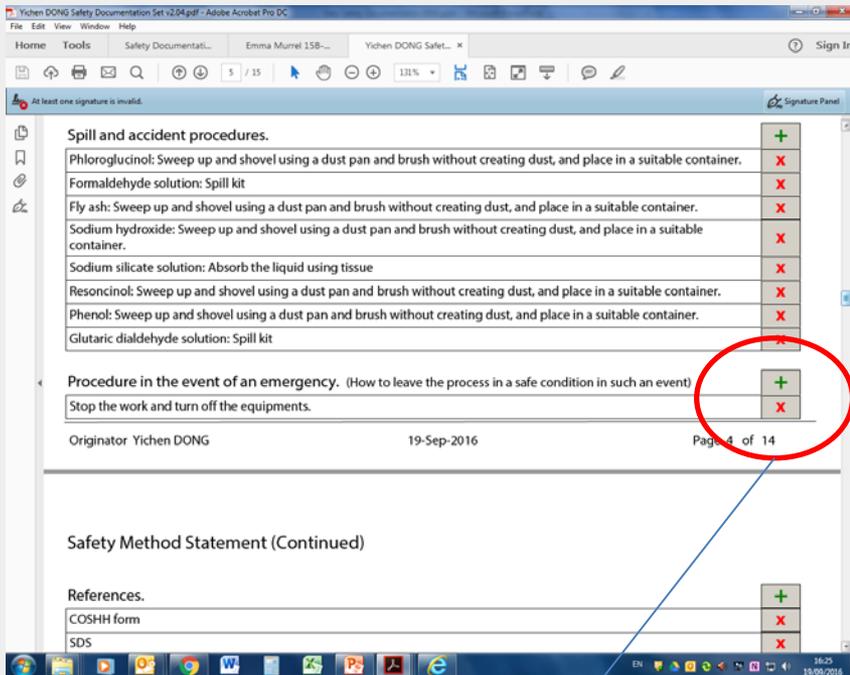
- Reference will be filled in by the DSO at the sign off stage – leave blank.
- Originator will be automatically filled to match the name entered on the front page.
- Choose the equipment used in your process by selecting from the drop down menus.
- Choose the training that you need to carry out the activity safely.

How to use the new Safety Documentation – Part 3: Method Statement

Section	Item	Status
What chemicals are being used? (These must be included in the COSHH Form)	Phloroglucinol	X
	Formaldehyde solution	X
	Fly ash	X
	Sodium hydroxide	X
	Sodium silicate solution	X
	Resoncinol	X
	Phenol	X
	Glutaric dialdehyde solution	X
Spill and accident procedures.	Phloroglucinol: Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.	X
	Formaldehyde solution: Spill kit	X
	Fly ash: Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.	X
	Sodium hydroxide: Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.	X
	Sodium silicate solution: Absorb the liquid using tissue	X
	Resoncinol: Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.	X
	Phenol: Sweep up and shovel using a dust pan and brush without creating dust, and place in a suitable container.	X
	Glutaric dialdehyde solution: Spill kit	X
Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)	Stop the work and turn off the equipments.	X

- Write a list of the chemicals you are using. These must match your CoSHH form which assess them in more detail.
- Use your MSDS to detail accident procedures – what would you do if you got it in your eyes or on your skin?
- Use the free text rows to manually type in your responses.

How to use the new Safety Documentation – Part 3: Method Statement



Use the Green + to add rows or red X to delete rows

- Use the free text field to manually type in what you would do in the event of emergency e.g. turn off gas cylinder, evacuate the area and notify the departmental safety officer or emergency services – note that the action taken should be proportionate to the risk (e.g don't say to evacuate the labs if there is a 5mL spill of a non-hazardous substance!)

How to use the new Safety Documentation – Part 3: Method Statement

- Add any references.
- Use the free text fields to manually type what you will do in your process, and any precautionary measures you should take.
- Eg. Weigh out 10g of Phloroglucinol. Precaution – weigh in the fume hood.

Safety Method Statement (Continued)

References.

COSHH form	X
SDS	X

Detailed sequential description of the process

Process step	Precautionary measures and comments	
Weighting the reagents on balance	All reagents are hazardous, the balance will be positioned under fume hood	X
Mixing phloroglucinol with formaldehyde to produce resin	Wear PPE, work in the fume hood whenever is possible	X
Reaction of fly ash with sodium silicate	Wear PPE, work in the fume hood whenever is possible	X
Reaction of resin and geopolymer	Wear PPE, work in the fume hood whenever is possible	X

How to use the new Safety Documentation – Final Sign off

Loughborough University
School of AACME - Department of Materials

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 
Digitally signed by Sara Ronca
DN: cn=Sara Ronca, o=Loughborough University, ou=Department of Materials, email=s.ronca@lboro.ac.uk, c=GB
Date: 2016.07.13 16:24:24 +01'00'

Form Reference Numbers

Risk Assessment 16/A/C/SR4/0007	Method Statement 16/A/C/SR4/0007	COSHH Assessment 16/A/C/SR4/0007a
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DSO Signature 
Digitally signed by Giuseppe Forte
DN: cn=Giuseppe Forte, o=Loughborough University, ou=AACME - Materials, email=g.forte@lboro.ac.uk, c=GB
Date: 2016.07.13 17:10:29 +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: 13/07/2017

Review comments

A completed form showing electronic signatures

- The completed form must be saved and emailed to the Supervisor, who will then check the forms for accuracy and supply an electronic signature if the form is suitable (if not it must be returned and amended)
- The Supervisor will then return the form to the student who will email the form to the Departmental Safety Officer (mp_safety@lboro.ac.uk) The DSO will also check and sign the form and assign a reference number. The DSO will also store the form on an electronic database for future reference.

Conclusion

- Preparing and recording risk assessments and CoSHH assessments is a legal requirement.
- Thinking about what you are going to do during your project and how you are going to carry it out safely will reduce the likelihood of accidents or ill health arising from a process or chemical used in your work.
- Carrying out the safety documentation process electronically saves time and paper and creates an efficient method for locating and sharing past assessments.



And finally...

...any questions?

