UNIVERSITY OF WARWICK

COSHH ASSESSMENT RECORD

School/Department …School of Engineering…….Assessor…….Vindy Tjendana Tjhin

Date of assessment ……15th March 2015…… Date of review …March 2016…….

Process/Activity
Chloroform treatment of resin sections

Numbers of people potentially exposed: 5 _____Duration: A few hours, several repeats

STEP 1: ASSESS THE RISKS – HAZARD POTENTIAL

SUBSTANCES IN PROCESS/ACTIVITY	HAZARD RATING eg High toxicity T+	CHIP – RISK PHRASES (APPENDIX I) eg R49 May cause cancer by inhalation	WEL * (eg ppm)	HAZARD POTENTIAL VH,H,M,L
Chloroform (trichloromethane)	Xn Harmful Xi Irritant	**R20** Harmful by inhalation. **R20/22** Harmful by inhalation and if swallowed. **R36/38** Irritating to eyes and skin. **R40** Limited evidence of a carcinogenic effect. Carcinogen category 3. **R48/20/22** Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed **R63** Possible risk of harm to the unborn child. **R67** Vapours may cause drowsiness and dizziness	LT exp 8 hrs **2 ppm** (note: can be absorbed by skin)	H

* see EH40 http://www.hse.gov.uk/coshh/table1.pdf

Other Information – Literature, Guidance Notes etc.

Sigma-Aldrich MSDS 288306

ASSESS THE RISKS - EXPOSURE POTENTIAL

Is exposure likely to be V. HIGH ☐ HIGH ☐ MEDIUM ☐ LOW ☒ during normal work

To Whom: e.g. experimenter, student etc.

Experimenters including PhD student, postdoctoral researcher, and supervising staff

Is exposure likely to be V. HIGH ☐ HIGH ☒ MEDIUM ☐ LOW ☐ during an unplanned event

To Whom: e.g. experimenter, student etc.

Experimenters as above, plus any visitors to the laboratory staff (students/staff engaged in other work)

STEP 2: PRECAUTIONS NEEDED - ESTIMATION OF RISK

The risk inherent in the activity is a function of the hazardous properties of the substances and the **highest** exposure potential of the process in which the substances are used.

Thus: RISK = HAZARD RATING x EXPOSURE POTENTIAL

From the product of the Hazard Rating and Exposure Potential, estimate the risk from the following table.

HAZARD POTENTIAL x EXPOSURE POTENTIAL	**ESTIMATED RISK**
VERY HIGH x HIGH	VERY HIGH
VERY HIGH x MEDIUM	VERY HIGH
VERY HIGH x LOW	HIGH
HIGH x HIGH	VERY HIGH
HIGH x MEDIUM	HIGH
HIGH x LOW	**MEDIUM**
MEDIUM x HIGH	HIGH
MEDIUM x MEDIUM	MEDIUM
MEDIUM x LOW	LOW
LOW x HIGH	MEDIUM
LOW x MEDIUM	LOW
LOW x LOW	LOW

SUBSTANCE	**ESTIMATION OF RISK**
Chloroform	Medium

Now an estimation of risk for the various hazardous substances has been established, the assessor must decide what control measures need to be put into place to protect the operative, and anyone else who might become exposed during the work. Before doing so, the assessor will also need to consider whether there is any scope for hazard reduction. See Step 3.

STEP 3: PREVENT OR ADEQUATELY CONTROL EXPOSURE – HAZARD REDUCTION

Reducing an initial hazard could reduce the estimated risk. For example

QUESTION	YES	NO	PROPOSED ACTION
Can the use of the substances be avoided?		No	
Are there less hazardous substitutes?		No	
Is the smallest practicable quantity being used?	Yes		approximately 1mL
Can a safer physical form be used? E.g. a solution of the substance rather than having to handle it in powder form.		No	

Note: For Estimated Risks which are not significant, finish the assessment now. No precautions are necessary for purposes of COSHH. Review assessment if situation changes.

Control Measures Required	YES	NO	Description/Discussion
	YES		

CONTROL MEASURES

The assessor is now in a position to select the Control Measures of the activity being assessed, and whether a specific operating procedure should be written. Where the Estimated Risk is Very High, a specific operating procedure must be written. Where the Hazard Rating is Very High, but exposure potential low, the need for a written safety Procedure should be discussed with the School COSHH adviser.

GENERAL DISCUSSION e.g. exposure potential, overall risk etc.

The exposure potential will be minimised by using the smallest amount possible for the procedure.

The protocol, including initial decanting of the chloroform, and subsequent steps utilizing it, will all take place in the ducted fume hood in F003.
The chloroform (~ 1 ml) will be decanted into a lidded container (preferably glass, as chloroform may attach some plastics).
A resin-embedded section floating in solution [10% ethanol, 90% double-distilled water] will have a cotton wool bud dipped in chloroform waved over the section, to try and relax the wrinkled section so that it lies flat.
The unused chloroform, and the cotton wool buds soaked in the chloroform, will be disposed of as chemical waste in a glass chemical waste bottle.
The experimenter will wear fluorinated rubber gloves, safety glasses, and lab coats at all times while working with the chloroform. Minimal amount will be used and procedure will only take place in the fume hood.

Control Measures Required	YES	NO	Description/Discussion
GOOD GENERAL VENTILATION	Yes		To be used only in operating ducted fume cupboard in well ventilated lab, F003
LOCAL EXHAUST VENTILATION e.g. by engineering controls. Includes Fume Cupboard or Microbiological safety Cabinet Class I & II, etc.	Yes		Fume cupboard (ducted, in F003)
FULL CONTAINMENT e.g. Microbiological Cabinet Class III		No	
SPECIAL FACILITIES e.g. dispensing/mixing rooms using very high risk substances		No	
PERSONAL PROTECTIVE EQUIPMENT e.g. eye protection, respirator, gloves, clothing, shoes	Yes		Wear: Safety glasses Gloves (fluorinated rubber, PVA or PTFE) Lab coat Closed shoes (i.e. not sandals) Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
SPECIAL DISPOSAL REQUIREMENTS	Yes		This material and/or its container must be disposed of as hazardous waste. Materials (e.g. cotton wool buds contaminated by this material must also be disposed of in chemical waste bottle).
LONE WORKING - if an issue		No	

STEP 4: ENSURE CONTROL MEASURES ARE USED AND MAINTAINED

Control Measures Required	YES	NO	Description/Discussion
Any containment and engineering controls are maintained, tested, recorded and are in date	Yes		Check fume cupboard operating correctly before each use
Any Personal Protective Equipment is properly maintained and tested. Fit testing carried out when oral nasal respirators are used		No	Respirator not required provided materials used in fume cupboard. Check gloves are appropriate material (not PVC) and sufficiently thick in case of accidental splash.

STEP 5: MONITOR EXPOSURE

The concentration of hazardous substances in air breathed in by workers must be monitored if:

- There is a serious risk to health if control measures failed
- Exposure limits may be exceeded, or
- Control measures may not be working properly

Control Measures Required	YES	NO	Description/Discussion
Is monitoring necessary		No	

STEP 6 – HEALTH OR MEDICAL SURVEILLANCE

Control Measures Required	YES	NO	Description/Discussion
HEALTH OR MEDICAL SURVEILLANCE e.g. carcinogens, sensitizers etc If so – to be referred to OHS		No	

STEP 7 – INCIDENTS AND EMERGENCIES

Control Measures Required	YES	NO	Description/Discussion
Emergency Procedures to deal with incidents and emergencies in place?	Yes		**Accidental Release:** Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. **Environmental precautions** Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. **Methods and materials for containment and cleaning up** Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, tightly closed containers in a dry place for disposal. **First aid advice:** Consult a physician. Show this safety data sheet to the doctor in attendance. **If inhaled:** If breathed in, move person into fresh air. If not breathing, give artificial respiration & seek emergency medical assistance. **In case of skin contact:** Wash off with soap and plenty of water. Take victim immediately to hospital and see medical advice. **In case of eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and seek medical advice. **If swallowed:** Never give anything by mouth to an unconscious person. If victim conscious rinse mouth with water. Seek medical advice

STEP 8 – INFORMATION, INSTRUCTION, TRAINING, SUPERVISION

Control Measures Required	YES	NO	Description/Discussion
Personnel have been provided with adequate information, instruction, training and supervision	Yes		Staff will ensure all control measures are in place before work commences, and all personnel undertaking the procedure are responsible for making themselves familiar with the content of this document.

BENCHMARK WITH 8 PRINCIPLES OF GOOD PRACTICE – SEE ANNEX 2

ARRANGEMENTS FOR MONITORING AND SUPERVISING THE ACTIVITY

The first time this activity is undertaken, it will be supervised by a member of staff who has prior experience using chloroform, who can confirm that the containment (fume) hood is operating and being used correctly, and that an appropriate waste disposal container is available. All personnel undertaking this work must be familiar with the contents of this form.

Signed by

Assessor Name.. Vindy Tjendana …….....Job Title.. PhD student...Date..12/03/2015

Verifier Name …Joanna Collingwood….. Job Title …Assoc Prof.. Date …15/03/2015

BEFORE WORK PROCEEDS

Are all the above control measures in place YES ☒ NO ☐

Who has verified this Name ..... Job Title …… Date

ANY OTHER COMMENTS

This work is only to be done in F003, not in F012 or F013 because the hoods use filters not ducting. It is necessary to check that the F003 hood is fully operational (i.e. air flow sensors on the hood are registering normal operation) before conducting the procedure.

Reviewed and approved 22/02/2017 by Joanna Collingwood

The availability of the ducted hood in F003 must be established before any work using this protocol is planned. Also note Vindy Tjendana is no longer in the lab. Any new user of this protocol needs approval from Prof Collingwood and to be added to this document beforehand.

11th May 2021