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School of Chemistry

GENERAL SAFETY
&
LABORATORY SAFETY
BOOKLET
(for Undergraduates)

2008

Edited by: Dr G W Dicinoski

TABLE OF CONTENTS

SAFETY RULES IN THE CHEMISTRY LABORATORY

The Chemistry Laboratory is a potentially dangerous place. However, if proper precautions are taken and safe procedures followed, the risk is minimal. In the Chemistry School, there are a number of rigorously enforced safety rules, which are given below together with some general guidelines about laboratory safety. Other specific precautions will be pointed out in the experimental directions for the experiments. Failure to observe these rules will result in your exclusion from the laboratory at the discretion of the staff member in charge of the class or the Employee Safety Representative (Dr Greg Dicinoski).

Under Tasmanian State Occupational Health and Safety (OH&S) legislation (Workplace Health and Safety Act 1995-1999), it is the responsibility of the University to provide a safe working environment for staff and students. Under this legislation, the individual also has a responsibility to ensure that they and others working in their area act in a safe manner and report any safety concerns to a responsible person.

To comply with the OH&S legislation the following safety rules are rigidly enforced by the School of Chemistry.

THE FOLLOWING SAFETY RULES APPLY AT ALL TIMES YOU ARE IN A CHEMISTRY LABORATORY

1. EYE PROTECTION MUST BE WORN
   Safety glasses must ALWAYS be worn in the laboratory, and are available for purchase by each student from the Student Union Mixed Shop.

   Unaided Vision: Safety goggles or safety glasses that conform with AS1337 (compliance is typically stamped on the side arms of the safety glasses) and which provide adequate protection from chemical splashing are to be worn at all times in laboratories.

   Contact lenses: Normal safety glasses do not provide adequate protection if contact lenses are worn. In this case, safety goggles conforming to AS1337 (check label) and which make a complete seal around the eyes must be worn at all times in laboratories. Contact lenses provide no protection and are an additional hazard in the chemical laboratory.

   Conventional Glasses: Safety goggles or safety glasses that conform with AS1337 and which provide adequate protection from chemical splashing are to be worn in addition to conventional glasses. Conventional glasses do not provide adequate protection against splashing.

   Shields giving complete face protection are available for dangerous experiments.

2. A LABORATORY COAT MUST BE WORN
   A laboratory coat made from cotton or cotton/polyester material is required, and are available for purchase by each student from the Student Union Mixed Shop.

3. SHOES COVERING ALL OF THE FEET MUST BE WORN
   Sandals, slides, thongs, shoes which do not fully enclose the foot, or bare feet are not permitted as they give insufficient protection.

4. LONG HAIR MUST BE CONFINED
   Hair is flammable. It is to be tied or pinned back or confined in a hair net.

5. NO FOOD OR DRINK IS TO BE CONSUMED
   The consumption of sweets, including cough drops, and the chewing of gum are all NOT permitted in the laboratory.

6. SMOKING IS NOT PERMITTED

7. NO SOLUTION IS TO BE PIPETTED BY MOUTH
   Rubber bulb pipette fillers are to be used at all times.

8. BEING UNDER THE INFLUENCE OF DRUGS OR ALCOHOL IS NOT PERMITTED
   A zero blood alcohol level is required for all laboratory work

9. LABORATORY WORK WITHOUT SUPERVISION IS NOT ALLOWED
   Undergraduate students may not enter a laboratory unless a school of chemistry staff member is present to supervise

10. MOBILE PHONES ARE NOT PERMITTED
    The use of mobile phones in the laboratory is a distraction to both the user and others nearby, and thus constitutes a safety hazard. If it so happens that you cannot be out of contact for emergencies, please see your demonstrator or course coordinator for assistance.

11. DUTY OF DISCLOSURE AND LABORATORY WORK
    For Occupational Health and Safety issues you are required under law to inform the unit coordinator, under strict confidentiality, if you have any condition that may adversely affect you (or others) in the laboratory. For example:

    a. Wear Contact Lenses: as stated in point 1, the wearing of contact lenses in the laboratory poses an additional hazard. If you wish to wear contact lenses in the laboratory you are required to inform your demonstrator, who will advise you on the correct type of eye protection required and any extra precautions necessary.

    b. Are Pregnant: if you are, or become, pregnant during the course of the laboratory program of the unit you MUST immediately notify your unit coordinator. You will NOT be prevented from undertaking the laboratory program, but this knowledge will allow extra precautions to be recommended/taken.

    c. Have Other Medical Conditions: these would include any condition, such as high or low blood pressure, propensity to black-out, or any other debilitating condition that could result in a safety issue within the laboratory.

12. LABORTORY COATS MUST NOT BE WORN IN GENERAL AREAS SUCH AS OFFICES, TEA-ROOM, TOILETS, ETC

13. GLOVES MUST NOT BE WORN OUTSIDE THE LABORAOTRY EXCEPT WHEN TRANSFERING HAZARDOUS SUBSTANCES
    Undergraduate students and researchers must be careful about chemical transfer when using gloves. Gloves should be removed before any general surface is touched (door knobs, computer/ instrument key boards and mice, etc).

14. HANDS SHOULD BE WASHED AFTER EACH SESSION IN THE LABORATORY AND BEFORE ANY OTHER ACTIVITY IS PERFORMED

Accident Reporting

Any accidents, incidents, or "near-misses" must be reported immediately in an attempt to avoid these being repeated in the future.

OH&S Contacts

If you have any concerns or issues involving safety, feel free to contact your demonstrator, your unit coordinator, the Chemistry Employee Safety Representative (ESR) (Dr Greg Dicinoski, Room 403, x2166(H) 0407 410 403(M)) who is responsible for the OH&S issues and concerns of all staff and students, the Chemistry Building Controller (Dr Greg Dicinoski, Room 403, x 2166 (H), 0407410403(M)), Campus Emergency Coordinator (Dr Greg Dicinoski, Room 403, x2166 (H) 0407 410 403(M).The Chairman of the Chemistry Building Safety Committee (Dr Peter Traill, Room 2024, x2200(H)), the Chemistry Laboratory Manager (Mr Murray Frith, Room 202, x2147(H), x3831(L), x3874(L)), or the Head of School of Chemistry (Assoc Prof Brian Yates, Room 204, x2167(H), x3864(L)), where x stands for extension. These numbers can be accessed by using any telephone within the University and dialling the 4 digit numbers or from outside the University by placing 6226- in front of the Hobart numbers (designated by (H)) and 6324- in front of the Launceston numbers (designated by (L)).

GENERAL SAFETY GUIDELINES

Familiarise Yourself with the Evacuation Procedure and the Location of:

Fire extinguishers.

Fire blankets.

Safety showers.

Emergency eye wash stations.

Minimise Fire Risk.

Hotplates should be used in preference to gas when possible.

Heatproof boards are provided and are to be used under hotplates and gas burners as instructed.

If gas is to be used, before lighting a burner check that there is no flammable vapour (ether, petroleum, etc.) nearby.

The building is supplied with "LP gas" (mainly propane, which is denser than air). It is essential not to allow this gas to form explosive mixtures with air. Strike the match BEFORE turning the gas on. Turn off the burner when you have finished using it.

Avoid Contact of Chemicals.

If contact occurs with the skin, wash the affected area thoroughly with soap (or detergent) and water, followed by the specific procedures and instructions given in the MSDS for the specific compound.

Any contact with a chemical must be reported IMMEDIATELY to your demonstrator, who will assess the situation, and either apply first-aid or call for a first-aid officer/doctor, if deemed necessary. In order to document the incident a report must be completed and passed on to your demonstrator who will forward the form to the ESR and the responsible officer.

Rubber gloves are to be worn when handling chemicals and when washing up contaminated glassware.

Do not inhale fumes and vapours of chemicals. If a noxious gas or vapour is being used or produced, work in the fume cupboard. An efficient gas trap may also be used.

Do not use your mouth to fill a pipette; use a pipette filler.

Never Apply Undue Pressure or Strain to Any Piece of Laboratory Glassware.

Due to the risk of serious injury or destruction of the glassware, please call a demonstrator or the laboratory technician to assist with this procedure.

Dispose of Unwanted Chemicals and Broken Glass Correctly.

Waste bins are provided at each bench for clean waste paper only. Unwanted solids should be made unreactive and placed into appropriately labelled waste containers or washed down the sink with copious water as appropriate.

Chemicals that react vigorously with water should be safely decomposed in the fume cupboard before disposal.

Residue bottles are provided in each laboratory for flammable and for water immiscible liquids as well as waste acids. Such liquids must not be emptied into the sinks. Do not mix chlorinated and non-chlorinated wastes, or acids.

Mineral acids should be suitably diluted before washing down the sink with copious quantities of water.

Broken glass must be placed in glass waste bins (not the wastepaper bins).

No chemicals/chemical compounds or contaminated paper, containers, etc are to be placed in the refuse bins – use the special designated waste containers in each laboratory as directed by your demonstrator or technician.

Report All Injuries and Accidents to the Staff Member in Charge of the Class.

Appropriate action can then be taken.

A First aid kit is available from the store in each laboratory, and Dr Adrian Blackman (Level 4), Dr Jason Smith (Level 4) Dr Emily Hilder (level 4) Dr Greg Dicinoski (Level 4), Mr Andrew Grosse (Level 4), Prof Paul Haddad (Level 4), Mr Elijah Marshall (level 4), Mr Graham Meredith (Level 3), Dr Rosanne Guijt (Level 3), Mr Jarrod Coad (Level 2) and Mr Murray Frith (Level 2), are trained first aid officers. An accident-incident report must be completed for all accidents/incidents/near misses. This form is available from your demonstrator, the ESR, the floor technician, first aid officer or the University website at: Http://www.admin.utas.edu.au/hr/ohs/ohs.html. Additional first aid officers are available in the Pharmacy and the CSL – please consult the Chemistry Building Safety Manual for details; Http://www.utas.edu.au/chem/docs/Chemistry%20Building%20Safety%20Manual%2008.pdf.

Safety Hazards Reporting

As part of the Act and the University's commitment to OH&S, you are encouraged to bring any safety hazard to our attention. This can be performed by completing a Safety Hazard Notification form available from your demonstrator, the ESR, the floor technician, Building Controller, Laboratory Manager or the University website at. Http://www.admin.utas.edu.au/hr/ohs/ohs.html.

Unattended Reactions and Apparatus.

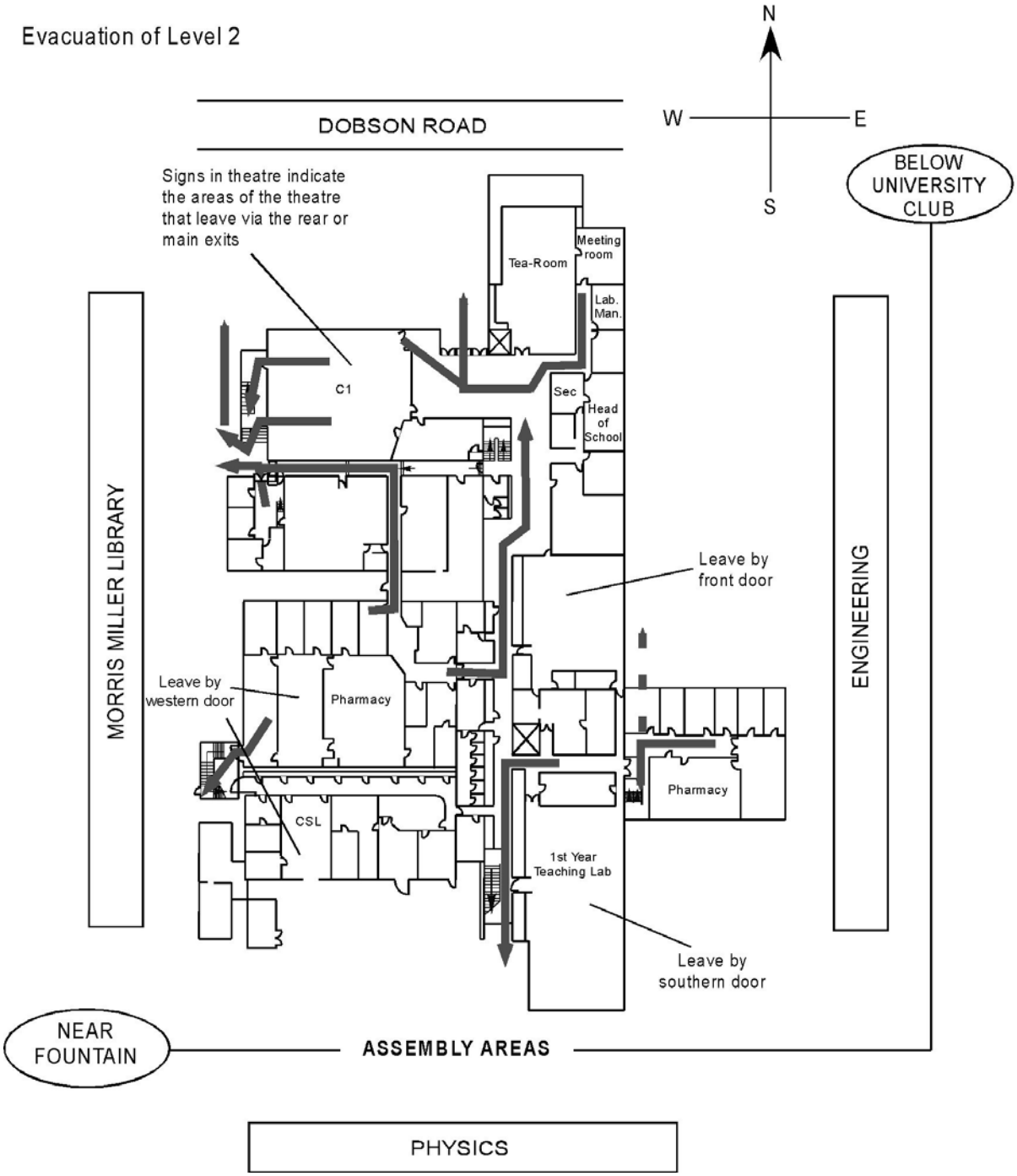
Permission must be obtained from your demonstrator before any items/experimental apparatus are left unattended. The "Unattended Experimental Apparatus Form" must be completed, signed and placed nearby. If you are unsure about whether your items can be left unattended or require a form, please consult your demonstrator before leaving.

EVACUATION PROCEDURES

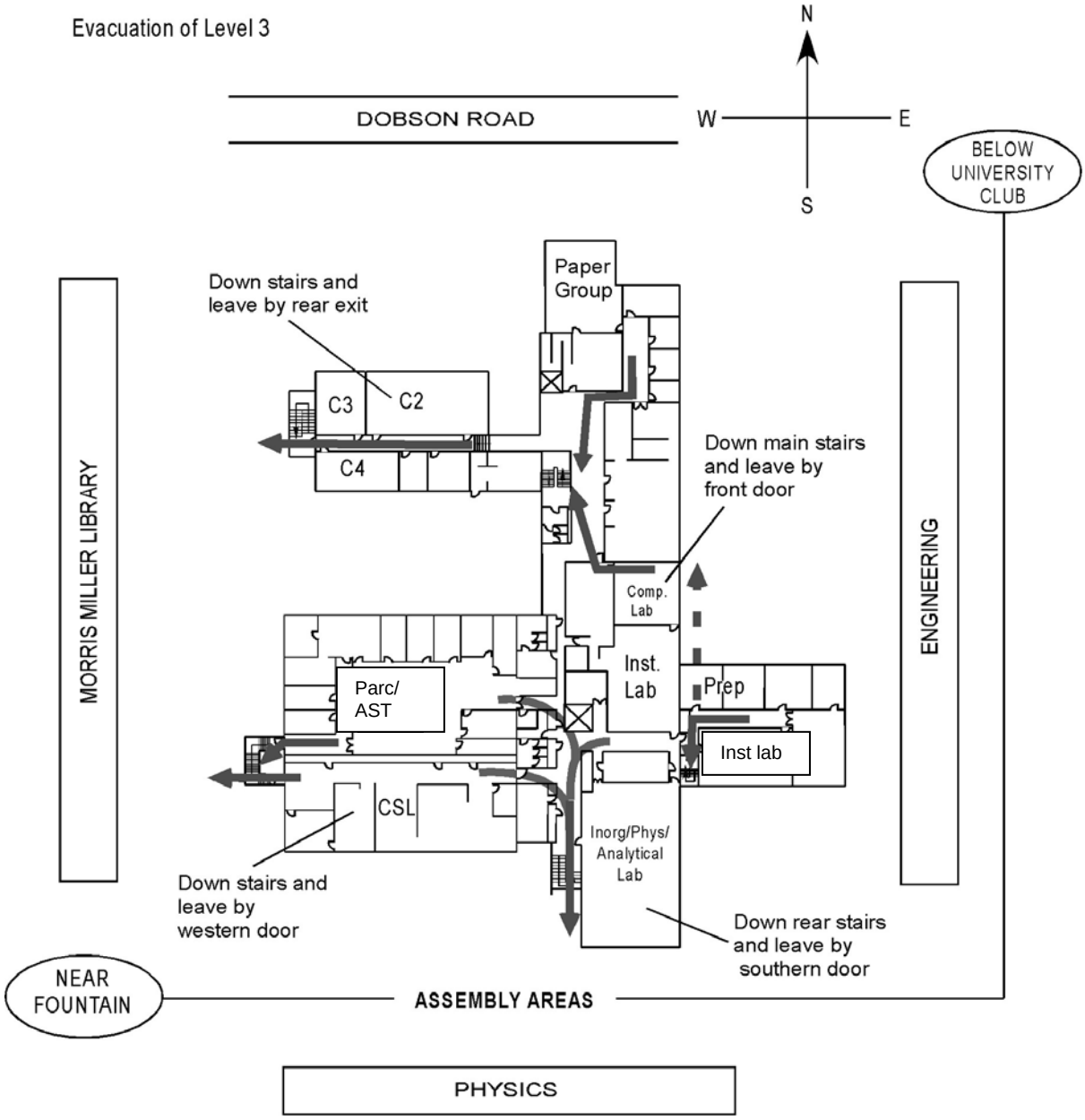
- Hazardous conditions can arise very rapidly in the School of Chemistry.
- The School of Chemistry is fitted with a Building Occupant Warning System (BOWS) which employs a 2 tone audible alarm (with accompanying PA announcements) to indicate that the building must be evacuated.
- On hearing the evacuation signal (a ”beep, beep” repeating tone following by a repeating “whoop, whoop” sound), or verbal command to evacuate the building you are required to turn off gas supplies and electrical equipment which you are using (unless this could cause potential hazards), close all windows, close but do not lock all doors, and leave the building promptly by the appropriate escape route. In the event that the route is blocked you will be directed to an alternative one. Do not turn any lights off. During these evacuations please follow all directions provided by the area wardens (indicated by a red safety helmet).
- Everyone must assemble either on the paved in the central mall near the Centenary Fountain or on the grassy area below the University Club
- Building re-entry will be prevented until the emergency is declared over.

Maps to levels 2-4 are shown on the following pages.

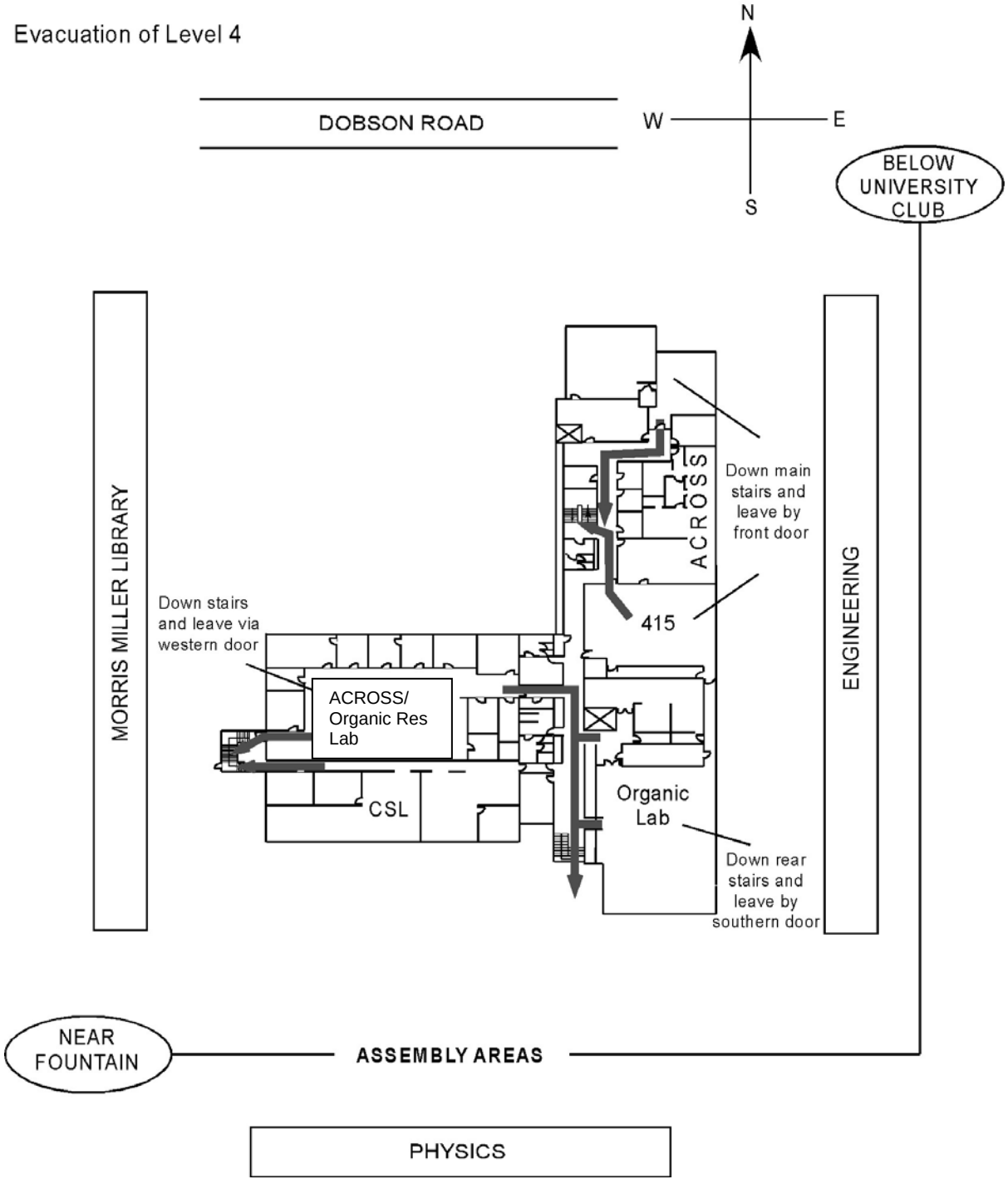
Evacuation of Level 2



Evacuation of Level 3



Evacuation of Level 4



LABORATORY SAFETY COURSE

As part of the School of Chemistry's contribution and commitment to the teaching of Occupational Health and Safety you will be required to satisfactorily complete a *Laboratory Safety Course*. This course will be conducted as part of your laboratory course, and must be completed by the end of 4th week of the laboratory course. This Vista based module will provide you with a good appreciation of how to assess and then minimise the risks associated with working with chemicals. In order to satisfy the requirements for this part of the laboratory program you must score at least 16 out of 20 on the quiz.

This course can be accessed on the Internet via the networked computers within the chemistry building, any other computer within the University which has Internet access, or from outside the University using any computer connected to the Internet via an Internet Service Provider. This course will be conducted using Vista, where your UserName is your POP e-mail name and your password is your POP e-mail account password.

The URL required to access these courses is: http://vista.utas.edu.au. After accessing the site you will asked to Log In using the above details. When successful, you will be presented with a list of available courses, from which you can select the Laboratory Safety Course for your particular year. Please follow the course content and complete the quizzes at the appropriate times, and remember you must obtain a score of at least 16 out of 20 to pass this component of your experimental course work.

UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM

Tasmanian Occupational Health and Safety legislation[1] requires that risk assessments be made on the hazards associated with using hazardous substances and situation in the workplace. This brings Tasmania in line with the National Model Regulations and National Code of Practice for control of workplace hazardous substances.[2]

Part of the requirement of the legislation is for you to have the necessary information available for you to understand any risks associated with your activities.

The aims of the regulations are to minimise the risk to health from work with hazardous substances and situations by:

- ensuring adequate information about the substance is always given to employers and employees (in the university's case, also students)
- stipulating that assessments must be done to determine if there is a risk of exposure to hazardous substances and circumstances
- if there is a risk of exposure, that it is controlled
- providing for the training of employees and students who could be exposed to hazardous substances in order that they may assess their level of risk, and assess and control their exposure

- Please remove this centrefold from the booklet;

- Read and sign the declaration inside;

- Hand the signed declaration to your demonstrator/unit coordinator during the first week of your practical course.

Declaration

I, ...

Student Number: .....,

undertaking Unit(s) *(please circle all those that apply to you)*

KRA221, KRA223, KRA225, KRA222, KRA226, KRA331, KRA332, KRA333, KRA334, KRA335, KRA336

have read the School of Chemistry *General Safety & Laboratory Safety Course (for Undergraduates) 2008* dealing with

- Safety in the Laboratory
- The Rules of Laboratory Safety
- General Safety Guidelines
- Evacuation Procedures
- Hazardous Substance Risk Assessments
- The Safety Course

I understand and undertake to observe all safety procedures. I have received and understood the occupational health and safety induction session, and understand the hazards involved with laboratory work and my responsibilities in this regard.

.....

Signature

.....

Date

Please sign this page, remove it from the booklet and hand it to your demonstrator/unit coordinator during the first week of the practical course.

Second and Third Year

Before commencing each experiment you are required to complete a procedural flow chart and an Undergraduate Experimental Hazard Identification Form. The flow chart will assist you in identifying all chemicals used and synthesised, the experimental operations and the materials for disposal. With this information defined, you will then complete the Undergraduate Experimental Hazard Identification Form sheet. The instructions for completing these forms are detailed below.

Material Safety Data Sheets are available in the laboratory (and via the Windows 2000 equipped machines in the Chemistry Computer Laboratory) and must be consulted. Other sources of information may also be employed.

The completed and signed sheets are to be retained in this laboratory manual and a photocopy submitted with the report of the completed experimental write-up.

Material Safety Data Sheets (MSDSs) are fact sheets that provide the information required to allow the safe handling of materials in the workplace. They provide information such as:

- the identity of the substance
- its physical and chemical characteristics
- potential health risks associated with its use
- correct instructions on how to use and dispose of the substance
- storage and transport information, and any special codes for emergency services in case of a mishap when using the substance.

An MSDS is required to be available in hard copy (and in electronic copy in Chemistry) for all substances used and synthesised in the teaching and research laboratories. These are located in special folders in the laboratory and on the computers in the computing laboratory. If you cannot locate a specific MSDS, contact your demonstrator.

The information obtained by you in completing these Undergraduate Experimental Hazard Identification Forms is to provide you with experience in the preparation of risk assessments for procedures involving hazardous substances.

In some **third year** units, you will also be required to perform a more detailed assessment of the risks associated with a particular laboratory exercise. This involves the preparation of a Project/Task Risk Assessment along with a Hazardous Substances Risk Assessment. These procedures resemble those you will be required to perform in the workplace. Details on the preparations of these assessments will be provided to you by the unit coordinator/demonstrators for these units at the appropriate time.

References:

1. *Workplace Health and Safety Regulations 1998.* Tasmanian Workplace Standards Authority.
2. *Control of Workplace Hazardous Substances. National Model regulations and National Code of Practice, 1994*. Worksafe Australia.

SCHOOL OF CHEMISTRY **UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM**

Experiment Name:

Substance	**Amount** (volume or mass)	Flammable	Explosive	Hazardous according to the NOHSC	*This section must be completed if the substance is identified as a Hazardous Substance*		**Disposal**			**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with using the substance**
					Health effects	**Exposure routes**	Sink with dilution	Appropriate waste container	**Other (give details)**		
Include: reagents; intermediates; products; by-products; solvents; stationary phases for separations etc. Mixtures must also be included. If the substance is a mixture the concentration/s must be stated, eg: • *Hydrochloric acid (0.1 M);* • *Diethylether/dichloromethane (1:1);* • *Benzophenone (0.5 M) in tetrahydrofuran.*	*In this field you must state the volume or mass of the substance.*	*Yes/No*	*Yes/No*	*Yes/No/Not assigned. For a mixture you must answer "yes" if any substance in the mixture is classified as hazardous according to the NOHSC.*	*In this field you must identify the health effects associated with the substance. See "Health Effects" and "Other Information" sections of the MSDS/s.*	*In this field you must identify the likely exposure routes, eg. skin, eyes, inhalation, ingestion, penetration.*	*Check if appropriate*	*Check if appropriate*		*In this field you must identify the controls required to reduce the hazard associated with the substance, include: use of fume hood; PPE etc. See "Precautions for Use" section of MSDS/s*	• *Risks not significant.* • *Risks significant but effectively controlled.* • *Risks significant but not adequately controlled.* • *Uncertain about risks.* *If 3 or 4 you should consult your demonstrator who will identify additional control measures.*
							This field need only be completed for substances which will need to be disposed of (ie. not consumed during reactions).				

Spills: Immediately notify the demonstrator of the laboratory session in the case of a spill. Do not attempt to clean up the spill yourself.

Other Hazards (including equipment and processes)	**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with the hazard**
In this field you must identify other hazards associated with the experiment, including: vacuum/pressure; electrical hazards; radioactive hazards; biological hazards; electromagnetic hazards; magnetic hazards; distillations; exothermic reactions; potentially explosive reactions;hot, cold, cryogenic hazards.	*In this field you must identify the controls required to reduce the risk of the hazard, include use of fume hood, PPE(Eye protection, Gloves, lab coat) etc.*	*1. Risks not significant.* *2. Risks significant but effectively controlled.* *3. Risks significant but not adequately controlled.* *4. Uncertain about risks.* *If 3 or 4 you should consult your demonstrator who will identify additional control measures.*

Date:

Student's name: _____
Student's signature: _____

Demonstrator's name: _____
Demonstrator's signature: _____

EXAMPLE OF A COMPLETED UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM

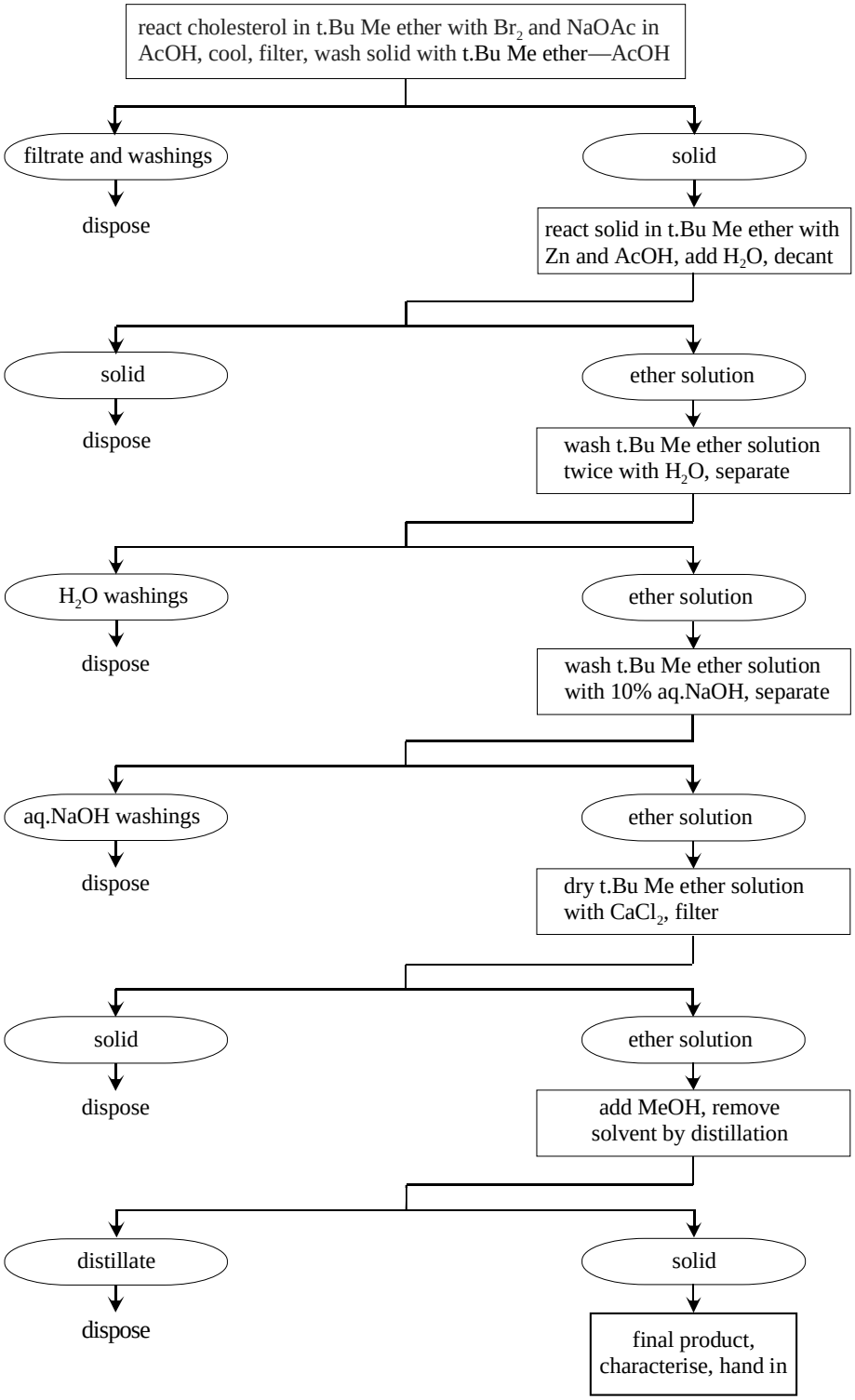
Bromination and De-bromination: The Purification of Cholesterol

(adapted from Williamson, 3rd Edition, page 285, Macroscale and Microscale Organic Experiments)

Experimental Detail:

In an Erlenmeyer flask dissolve 1 g of cholesterol in 7 mL of *tert*-butyl methyl ether by gentle warming and, with a plastic stringe add 5 mL of a solution of bromine and sodium acetate in acetic acid. Cholesterol dibromide begins to crystallise in a minute or two. Cool in an ice bath and stir the crystalline paste with a stirring rod for 10 minutes to ensure complete crystallisation, and at the same time cool a mixture of 3mL of *tert*-butyl methyl ether and 7 mL of acetic acid in ice. Then collect the crystals on a small suction funnel and wash with the iced *tert*-butyl methyl ether/acetic acid solution to remove the yellow mother liquor. Finally wash with a little methanol, continuing to apply suction, and transfer the white solid without drying it (dry weight ~ 1.2 g) to a 50 mL Erlenmeyer flask. Add 20 mL of *tert*-butyl methyl ether, 5 mL of acetic acid, and 0.2 g of Zn dust and swirl. In about 3 min the dibromide dissolves; after 5-10 min swirling, zinc acetate usually separated to form a white precipitate (the dilution is sometimes such that no separation occurs). Stir for 5 min more and then add water by drops (no more than 0.5 mL) until any solid present (zinc acetate) dissolves to make a clear solution. Decant the solution from the zinc into a separatory funnel, and wash the ethereal solution twice with water then with 10% aqueous sodium hydroxide (to remove traces of acetic acid). Then shake the *tert*-butyl methyl ether solution with an equal volume of saturated sodium chloride solution to reduce the water content, dry the ether with anhydrous sodium sulfate, remove the drying agent, add 10 mL of ethanol and a boiling stone. Remove the solvent by distillation until crystallisation begins to occur. Remove the heat source and let crystallisation proceed at room temperature and then in an ice bath. Collect the crystals and wash them with cold methanol; you should obtain a yield of 0.6-0.7 g with a melting point of 149-150 °C.

Purification of cholesterol—procedural flowchart



SCHOOL OF CHEMISTRY **UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM**

Experiment Name: : *Bromination and Debromination: Purification of Cholesterol*

Substance	**Amount** (volume or mass)	**Flammable**	**Explosive**	**Hazardous according to NOHSC**	*This section must be completed if the substance is identified as a Hazardous Substance*		**Disposal**			**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with using the substance**
					Health effects	**Exposure routes**	**Sink with dilution**	**Appropriate waste container**	**Other (give details)**		
Cholesterol	1 g	N	N	N	-	-			Hand in at the end of the experiment	-	Risks not significant
Bromine	4.5 g	N	N	Y	Very toxic by inhalation - acute Causes severe burns - acute	Inhalation Eyes Skin				Use in fume hood Wear neoprene rubber gloves	Risks significant but adequately controlled
Sodium acetate	0.4 g	N	N	N	-	-					Risks not significant
Acetic acid (glacial)	16 mL	Y	N	Y	Corrosive - acute Causes severe burns - acute Risk of serious damage to eyes - acute	Inhalation Eyes Skin				Use in fume hood, remove ignition sources, Wear neoprene rubber gloves	Risks significant but adequately controlled
tert-Butyl methyl ether	30 mL	Y	N	Y	Harmful, may cause lung damage - acute May be fatal if swallowed - acute Possible carcinogen - chronic	Inhalation Eyes Skin				Use in fume hood, remove ignition sources, Wear rubber gloves	Risks significant but adequately controlled
Methanol	15 mL	Y	N	Y	Toxic by inhalation/ingestion - acute Toxic if absorbed through skin - acute Repeated exposure may lead to impaired vision - chronic	Inhalation Eyes Skin				Use in fumehood, remove ignition sources, Wear PVC, neoprene or nitrile rubber gloves	Risks significant but adequately controlled
Cholesterol dibromide	1.2 g	N	?	N	**Caution** - no data available	Eyes Skin				Use in fume hood Wear rubber gloves	Uncertain about risks
Reaction mixture + washings, containing: Cholesterol; *tert*-Butyl methyl ether; bromine; sodium acetate; acetic acid; halogenated organics	~20 mL	?	?	Y	Harmful, may cause lung damage - acute, May be fatal if swallowed - acute, Possible carcinogen - chronic Very toxic by inhalation - acute, Causes severe burns - acute, Harmful if swallowed - acute, Corrosive - acute, Risk of serious damage to eyes - acute	Inhalation Eyes Skin		✓		Use in fume hood Wear neoprene rubber gloves	Risks significant but adequately controlled

Spills: Immediately notify the demonstrator of the laboratory session in the case of a spill. Do not attempt to clean up the spill yourself.

Other Hazards (including equipment and processes)	**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with the hazard**
Distillation - possibility of fire	Conduct in fume-hood, fire blanket available	Risks significant but adequately controlled
Solvent extraction - possibility of pressure build up and exposure to solvent	Conduct in fume-hood, relieve pressure regularly and hold cap and funnel firmly. Do not point funnel towards colleagues.	Risks significant but adequately controlled

Date:

Student's name: _____

Student's signature: _____

Demonstrator's name: _____

Demonstrator's signature: _____

SCHOOL OF CHEMISTRY UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM

Experiment Name: : *Bromination and Debromination: Purification of Cholesterol*

Substance	Amount (volume or mass)	Flammable	Explosive	Hazardous according to NOHSC	*This section must be completed if the substance is identified as a Hazardous Substance*		Disposal			Controls required (other than standard safety glasses and lab coat which are mandatory)	With controls in place what is the risk associated with using the substance
					Health effects	Exposure routes	Sink with dilution	Appropriate waste container	Other (give details)		
zinc dust	0.2 g	Y	N	N	-	-		✓		-	Risks not significant
zinc acetate	~0.3 g	N	N	Y	Harmful if swallowed - acute	Eyes Skin				Wear neoprene rubber gloves	Risks significant but adequately controlled
water	0.5 mL	N	N	N			✓		-	-	Risks not significant
water washings, containing: water; acetic acid; zinc acetate.	~25 mL	N	N	Y	Harmful if swallowed - acute	-		✓		Wear neoprene rubber gloves	Risks not significant
sodium hydroxide solution (10%)	20 mL	N	N	Y	Causes severe burns - acute Risk of serious damage to eyes - acute	Eyes Skin	✓			Wear rubber gloves	Risks significant but adequately controlled
sodium chloride solution (saturated)	20 mL	N	N	N				✓		-	Risks not significant
sodium sulfate (anhydrous)	5 g	N	N	N				✓		-	Risks not significant
Distillate, containing: *tert*-butyl methyl ether; methanol.	~ 30 mL	Y	Y	Y	Toxic by inhalation/ingestion - acute, Toxic if absorbed through skin - acute, Harmful, may cause lung damage - acute, May be fatal if swallowed - acute, Possible carcinogen - chronic	Eyes Skin		✓		Usee in Fumehood, remove ignition sources, Wear PVC, neoprene or nitrile rubber gloves	Risks significant but adequately controlled

Spills: Immediately notify the demonstrator of the laboratory session in the case of a spill. Do not attempt to clean up the spill yourself.

Other Hazards (including equipment and processes)	Controls required (other than standard safety glasses and lab coat which are mandatory)	With controls in place what is the risk associated with the hazard

Date:

Student's name: _____

Student's signature: _____

Demonstrator's name: _____

Demonstrator's signature: _____

SCHOOL OF CHEMISTRY **UNDERGRADUATE EXPERIMENTAL HAZARD IDENTIFICATION FORM**

Experiment Name:

Substance	**Amount** (volume or mass)	Flammable	Explosive	Hazardous according to NOHSC	*This section must be completed if the substance is identified as a Hazardous Substance*		**Disposal**			**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with using the substance**
					Health effects	**Exposure routes**	Sink with dilution	Appropriate waste container	**Other (give details)**		

Spills: Immediately notify the demonstrator of the laboratory session in the case of a spill. Do not attempt to clean up the spill yourself.

Other Hazards (including equipment and processes)	**Controls required** (other than standard safety glasses and lab coat which are mandatory)	**With controls in place what is the risk associated with the hazard**

Date:

Student's name: _____
Student's signature: _____

Demonstrator's name: _____
Demonstrator's signature: _____

ELECTRONIC ACCESS TO MSDS

Printed versions of Material Safety Data Sheets (MSDS) are available in the teaching laboratories however this information can also be obtained electronically.

Each computer in the Chemistry Computer Laboratory can be used to access InfoSafe, the university's MSDS system. One advantage of this system is that it complies with Australian regulations. Other sources of MSDS information can be obtained via the web.

Accessing InfoSafe

- log onto one of the computers (they use the Windows 2000 operating system)
- click on the icon for Internet Explorer Internet browser
- enter the URL http://www.infosafe.utas.edu.au
- access the MSDS Database for information on Material Safety Data Sheets
- (If you do not then seek help; in the first instance from Mr Graham Meredith)

If the substance you wish to obtain information on is not contained within the Infosafe system, you will need to use the ChemWatch database located on the computers in the School of Chemistry Computer Laboratory.

- Click on Start|Programs|ChemWatch|ChemWatch
- Click on Database
- Click on Level 1 (simplified) or Level 2 (advanced)
- Supply the name of a chemical, then press the Enter key or click on Search
- Browse the MSDS for the required information

For example try the MSDS Section *Physical Data*
Boiling Point
Flash Point
or
Health Effects
Acute - Swallowed
Chronic
or
First Aid
Swallowed
Eye

- Quit the program by clicking on Close/Close/Exit

Note: this is a simplified guide. Feel free to explore the program more fully.

Accessing MSDS via the web

Sigma-Aldrich: http://www.sigmaaldrich.com

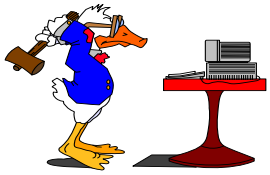
Links to additional MSDS information and other useful safety advice are available via the Chemistry School's home page

Http://www.scieng.utas.edu.au/chem

In particular try:

Http://www.utas.edu.au/chem/chemsafety.htm

SCHOOL OF CHEMISTRY COMPUTER LABORATORY



- Located in Room 309, behind the third level instrument laboratory
- Contains approximately 20 computers running the Windows XP SP2 operating system
- The laboratory is only for the use of Chemistry students, DO NOT give anyone else the ability to use these computers
- Student **log-on** account names are supplied by:
  - *Supplied by Mr Graham Meredith (3rd Level Store) (via Mr Caesar Bruno)*
- Student **passwords** for accounts are supplied by:
  - *Supplied by Mr Graham Meredith (3rd Level Store) (via Mr Caesar Bruno)*
- This accounts entitles you to access the software loaded on the computers:
  - Microsoft office – Word, Excel, PowerPoint – 2007 version
  - Other teaching and computer aided instruction software.
  - The Internet
    - You CANNOT write to the hard drives on these computers, so make sure you carry a supply of floppy disks, CD's/DVD's, or a USB flash drive/memory stick with you.
- In order to access e-mail, we encourage you to use this form of communication, obtain an e-mail address from Information and Technology Services (ITS) Help Desk, which is located on the ground floor of the Morris-Miller Library.
  - This address will also be printed on your enrolment form.
  - You can access the e-mail client over the Internet from any computer which is connected to the Chemistry network, or has Internet access. The URL required is Http://webmail.utas.edu.au, and the facility requires simple configuration the first time it is accessed.
- You can also print out information on the printer located in the laboratory
  - There is a charge of 11 cent/page for this printing
  - Controlled and administrated by Information and Technology Services on a debit basis
  - You must go to the ITS Help Desk (Morris-Miller Library) and obtain a **UserName** and **Password** for the campus printers (this access will work on any printer or photocopier located in any computer laboratory around the campus)
  - You must also put some money on the account to enable it to work
    - No minimum amount required
  - When you send a job to the printer you will ask to enter this **UserName** and **Password** before the job will be processed – your account will then be debited
- The computer laboratory is open every working day from 9.00 am until 5.00 pm
  - Due to safety reasons (it is located in laboratory space) these facilities are not available after hours and access is via the central corridor following the wall and demarcation lines.
  - If you require assistance please contact, Mr Graham Meredith in Room 313 on extension 6226-**2168**, or Mr Caesar Bruno in Room 339 on extension 6226-**1819**.