La Trobe University,
School of Pharmacy & Applied Science

Occupational Health and Safety Guidelines

For Staff and Research Students

2009

These guidelines have been prepared to provide safety information specific to Bendigo Pharmacy and Applied Science as a supplement to the University OHS manual and related documents located at http://www.latrobe.edu.au/ohs/ . Further detailed information specific to each research group is located in the Lab Safety Manuals located in each laboratory/ group of laboratories.

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Your Safety and Compliance with occupational health and safety legislation

The purpose of this document is to ensure that all Staff and Students working in the School of Pharmacy and Applied Science are aware of potential hazards in the workplace and have appropriate access to information and assistance to reduce those risks as far as practicable.

Most aspects of safe laboratory practice are covered by State and Federal Legislation. It is the University's responsibility to provide an environment which is "safe and with out risk to health" and the responsibility of all persons who enter the workplace to comply with the rules and procedures explained to them.

Your cooperation in understanding and helping to maintain the high standard of safe work practice achieved by the school is essential. Failure to do so can lead to avoidable accidents and /or the University being liable for prosecution.

Please read these guidelines carefully. You will be asked to sign a document to say you have read and understood the content herein.

Safety personnel contact details

The table below describes the various OHS roles within the School and the persons nominated to undertake those roles

NAME	**ROLE**	**CONTACT DETAILS**
Jasim Al-Rawi	Chair of OH&S-Bendigo Lab Safety Committee	AS1-3.08 Tel: 7364
Glenys Shirley	Designated Workgroup Representative	AS2-2.22/1.07 Tel: 7906
Christina Dennis	Deputy Designated Workgroup Representative	AS2 3.01 Tel: 7351
Bob Seviour	Radiation Safety Officer	AS1-3.15 Tel: 7459
Ian Swift	PC2 Facility Liaison	AS2-3.04 Tel: 7365
Barb Udale	Resources/ Store Manager	AS1-4.15 Tel: 7399
Dot Andison	App Sci 1 Building Warden	AS1-3.08 Tel: 7842
Mal Haysom	App Sci 2 Deputy Building Warden	AS2-2.16 Tel: 7397
Susan Treloar	First Aider	AS1-4.02 Tel: 7399
Sabine Wilkens	First Aider	AS1-3.02 Tel: 7370
David Osborne	First Aider	AS2-1.11 Tel: 7402
Glenys Shirley	First Aider	AS2-2.22/1.07 Tel: 7906
Rod Lindrea	Electrical Safety Checking/ First Aider	AS2-1.03 Tel: 7394

Emergency procedures

EVACUATION

- If the building alarm system is activated, all personnel are expected to leave the building immediately and proceed to the assembly point (the northern end of the sports oval near the sports centre). Follow the instructions of Building Floor Wardens (wearing fluorescent safety vests) who control the overall evacuation.
- Staff who are supervising undergraduate classes should remain with the group, ensuring that all students evacuate the building
- Remind students to leave bulky personal belongings such as bags in lockers
- Assist all persons to remain calm
- Remain with your group at the assembly point until all persons are accounted for or until notified by the emergency authority that it is safe to return.

ACCIDENTS, INCIDENTS AND FIRST AID

Injuries of any type (or incidents that had a high probability of causing injury) must be reported straight away to the supervisor Trained first aid staff or the campus nurse may need to be consulted. An incident report form must also be completed and submitted to Barb Udale or Sue Schrieber within 24 hours of the accident/incident and immediately in the event of a serious accident. If uncertain about whether an incident should be reported, you should discuss with Barb Udale or Sue Schrieber. If the incident is determined to not warrant formal reporting it may be recorded in the minor incident register which is a local document kept in room 4.15. This will enable appropriate action to be taken if patterns emerge concerning less serious incidents.

Download incident forms from *http://www.latrobe.edu.au/hr/forms/incident_report.pdf*
Incident Forms are also held in Section 9 of your Lab Safety Manual

ISSUE RESOLUTION PROCEDURES.

If you become aware of unsafe conditions in the workplace, the first person you should approach is your supervisor. If your matter is not resolved within a reasonable time period, you have the option of consulting the Designated Work Group representative for your area, Glenys Shirley or Christina Dennis. DWG reps are independent of university management and elected by the workgroup to assist in the resolution of OHS matters. Latrobe's issue resolution procedure can be found at

http://www.latrobe.edu.au/hr/ohs/ohs-manual/issue-resolution.PDF

SPILL TREATMENT

All laboratories are provided with a SPILL KIT designed to cope with most spills that might occur in that laboratory. Make sure you are prepared to commence chemical work by noting the location of the SPILL KIT. All staff and students, particularly those who may be supervising undergraduate laboratory work must be familiar with the Spills procedure in Appendix 1 of these guidelines.

For spills involving Hazardous Substances and Dangerous Goods, you should also consult the Material Safety Data Sheet and Risk Assessment (explained in the following section) which may provide specific recommendations for spill treatment.

For spills involving biological contaminants or radioactive substances refer to the appropriate procedure in

Appendix 1

General Aspects of Laboratory Safety

BASIC ESSENTIALS

- **Safety spectacles are compulsory at all times when working with chemicals or potentially infectious materials**
- **A laboratory coat and appropriate footwear must be worn during all laboratory work**
- **Before commencing work in any laboratory, familiarise yourself with evacuation procedures, the location of the nearest fire extinguisher, fire blankets, safety showers, electrical cut off switches and eyewash fountains and be sure you know how to use them.**
- **Correct labelling of all containers is essential and should include full chemical/substance name, users name and date of preparation or decanting.**
- **Food must not be consumed or stored in laboratories**

IDENTIFICATION OF HAZARDOUS EQUIPMENT AND PROCEDURES

The starting point of any safety system is the identification of all hazards in the workplace. The lab Supervisor shall identify all items of potentially dangerous equipment and procedures, recording such items on a 'Hazard Identification Checklist' which will be kept in the Lab Safety Manual Section 2 Each lab user should be aware of potential hazards in the laboratories they work in (eg Autoclaves, Centrifuges, compressed gasses, electrical equipment). A Risk Assessment (RA) and/or Safe Operating Procedure (SOP) should be provided for all hazards rated as moderate or high risk and kept in the Lab Safety Manual Section 4. See notes to follow. Appropriate training must be given by the lab supervisor or their nominee before potentially hazardous equipment or processes are employed and an individual record of the training kept in that research groups' Lab Safety Manual, Section 8.

MATERIAL SAFETY DATA SHEETS (MSDS)

Under the Victorian Occupational Health and Safety Act 2004, suppliers of Dangerous Goods (DGs) or Hazardous Substances (HSs) are required to disclose all known hazards associated with the use of their product. The MSDS is the accepted format of this information. An MSDS for every chemical which is classified as either "Hazardous" (according to criteria of the National Occupational Health and Safety Commission (NOHSC)) or "Dangerous Goods" (as listed in the Australian Dangerous Goods Code) must be held by the research group storing the chemical and filed in the labelled folder provided in the lab (or main store for chemicals used in teaching and prep labs) It is the responsibility of the Laboratory Supervisor to ensure these records are kept up to date (no more than 5 years old). The Store Manager will issue a current list of chemical stocks to each lab for verification annually. From 2009, a coversheet for all new and updated MSDSs should be filled in to verify whether a separate risk assessment is required for the chemical (high risk chemicals only), and should be signed by all users of the chemical to verify that they have read the MSDS.

RISK ASSESSMENT (RA)

Risk assessment is the process by which potentially hazardous chemicals, equipment or processes are evaluated for their potential to do harm and to initiate harm reduction strategies. Please see Appendix 6 for details of the new RA procedure for dangerous goods and Hazardous substances.

Risk Assessment forms are available from the main store room AS1-4.15 and by following the links to the OH&S site of the Pharmacy and Applied Science home page. Completed RAs for processes and equipment are kept in Section 3 of the Lab Safety Manual. Completed RAs for chemicals are kept in a separate folder in each lab or from 2009 will be attached to the relevant MSDS in the MSDS folder.

Training on Risk Assessment preparation is provided at OHS induction for all new staff and graduate students.

MAINTAINING A CHEMICAL REGISTER

A chemical register that details all chemicals held in a particular lab (or group of labs) is kept at the front of the MSDS folder. The register should display the date of last review and which storage locations (room numbers) are covered. Please ensure the register is updated whenever new chemicals are brought into a lab or current stocks are consumed and that MSDS records and RAs are updated accordingly.

The Maintenance of a chemical register, provision of MSDSs and preparation of Risk Assessments form the basis of good lab practice and legislative compliance. These aspects are most closely monitored by Worksafe who may enter the premises at any time to monitor compliance with Legislation.

All staff and research students are expected to attend a separate training session covering these aspects in the first month of joining the School. Sue Schrieber will arrange a suitable time for this training

WASTE DISPOSAL:

Please refer to the School of Pharmacy and Applied Science waste disposal chart located on lab noticeboards and in the Waste Management Section 7 of the Lab Safety Manual. If unsure of how to dispose of any material, please seek advice from the Store Manager Barbara Udale

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE refers to all types of gloves, respirators, face masks, eye protection, hearing protection, coats, aprons and footwear. Before deciding what kind of personal protective equipment is appropriate in a situation, first consider

- If the procedure can be modified to eliminate the hazard?
- If the hazardous component can be substituted with a non hazardous alternative?

Gloves Must be chosen to meet the chemical, physical and thermal properties of the hazard. See the MSDS for recommendations where Dangerous Goods (DGs) and Hazardous Substances (HSs) are being handled.

Be aware that where gloves are worn to protect user from infective radioactive and toxic hazards, unnoticeable traces may contaminate the outside of the glove, therefore to prevent accidental spread of contamination

- Do not pick up pens, pencils, turn on instruments, answer phones etc. while potentially contaminated gloves are being worn.
- Remove gloves once handling of contaminated article is complete.
- Gloves must be discarded in the appropriate waste bin immediately they are no longer needed If it is necessary to rehandle infective/contaminated articles, use a new pair of gloves.
- **Gloves must not be worn outside the laboratory under any circumstances**.

Respiratory protection

- Canisters and masks must comply with Australian/NZ Standards. Check the labels before use.
- Face mask must fit user such that inspired air is drawn through the canister only.
- Canisters must be appropriate for particle size and chemical nature of the hazard.
- Canisters to be dated when opened and stored in an air tight bag away from gaseous contaminants to prevent saturation of the neutraliser. Replace canisters regularly (maximum use 6 months), particularly if breathing through respirator becomes noticeably more difficult. Follow manufacturers instructions

Dust masks are only to be used as barrier to minor irritants of particulate nature (not chemical) for short duration.

Hearing protection 

- Only to be used for short term exposure. If hearing protection is used for more that 15 minutes per day, request the Lab Manager to conduct audiometric assessment of task (AS 1269).
- Ensure that ear muffs fit correctly ie provide firm pressure over entire outer ear and do not slip.
- Maintenance checks of earmuffs to be carried out every 6 months (in conjunction with lab safety audit) in accordance with manufacturers instructions.
- Regular users of hearing protection to receive audiometric testing biennially

ELECTRICAL HAZARDS

Electrical equipment can cause injury and death as well as starting fires and explosions. For this reason all electrical equipment must be tested by a licensed person every 5 years unless the equipment is subject to damage or wear that would be likely to increase the risk of electrical fault (see AS/NZ 2243.7) and tagged to show the date of testing. High voltage experimental apparatus is especially dangerous. Please check equipment before you use it to ensure the equipment has not reached its next test date. Some equipment which is in storage or infrequently used may have an "Electrical Inspection Bypass" tag attached to the power cord. If you wish to use this equipment, contact the electronics technician to have the equipment tested before use.

Emergency Stop switches which cut all electricity to the lab are installed in most laboratories. Please familiarise yourself with the location of these switches. Accidental activation of a cut out switch can lead to loss of refrigerated specimens/ reagents.

Chemical Aspects of Laboratory Safety

CHEMICAL STORAGE AND HANDLING

All chemicals must be stored according to Dangerous Goods Class coding (diamond labels) and in the manner and quantities prescribed by the Dangerous Goods Storage and Handling Regulations (2000).

For practical user friendly advice in this area refer to the LTU safety manual at http://www.latrobe.edu.au/ohs/ section titled Chemical Management Procedure

Before handling any chemical for the first time, consult the MSDS and Risk Assessment if applicable and follow the recommendations for safe handling

- The Laboratory supervisor will ensure that adequate storage and handling practices are established in each laboratory. Please familiarise yourself with local procedures and maintain these practices.
- The Worksafe document "Recognising Dangerous Goods" indicates which chemical groups should not be stored next to one another in cupboards or on shelves. See Appendix 5 or access the Worksafe page http://www.worksafe.vic.gov.au/wps/wcm/connect/WorkSafe/Home/Forms+and+Publications/Publications/import_Recognising+Dangerous+Goods+Segregation+Chart+-+A4+%26A3+Size
- Particular attention must be paid to chemicals in Class 3 (flammable liquids), Class 5.1 (oxidising agents) and 5.2 (organic peroxides).
- Ensure that the quantity of chemicals stored in laboratories is kept to a minimum. Flammable storage cupboards will have instruction tables posted on the outside which allow you to calculate the maximum quantities of Dangerous Goods in various classes that can be stored in the lab without the need for

specialised containment (such as flammable liquids cabinets). Please check quantities regularly and inform the Store Manager (Barb Udale) if your minimum storage needs exceed these limits.

- Some chemicals form explosive peroxides when stored inappropriately or over time. If you use or store potential peroxide formers in your lab , please download the Safe Operating Procedure (SOP), which contain a list of common peroxide forming chemicals, by follow the links from the SOPAS homepage - OHS Guidelines for Staff and Research Students - Safe Operating Procedures.
- Barb Udale will test any peroxide formers identified annually.

FIRE AND EXPLOSION PRECAUTIONS

Chemicals in Class 3, (flammable liquids) must not be stored in ordinary refrigerators due to the likelihood of accumulation of flammable vapours which can ignite when an uninsulated motor is activated. Purpose built solvent fridges for the storage of DG Class 3 flammable liquids and flammable reaction mixes are available in

- AS1 room 2.14 for research & post graduate use
- AS1 room 4.05 for undergraduate use
- AS1 room 4.15 (Main store) for technical staff use
- Containers should be sealed to prevent vapour escape. This also applies to potentially flammable reaction mixtures. The compliance with these procedures will be monitored at regular intervals by OH&S personnel and/or senior academic staff.

To reduce the risk of fire and explosion it is necessary to have an understanding of factors such as sources of ignition, flash point and ease of ignition. Sources of Ignition most common in undergraduate labs are Bunsen burners, power and lighting switches, electric heaters and static electricity which can accumulate on a person wearing manmade fibre clothing or rubber - soled shoes for example.

Flash point is defined as the minimum temperature at which the vapour of a liquid can give rise to an explosive mixture with air. The flash points of some widely used organic liquids are: Ethyl alcohol (+13^{o}C), Acetone (-18ºC), Diethyl ether (-43 ^{o}C). These solvents can produce an inflammable atmosphere inside an ordinary refrigerator or closed container and must never be stored in refrigerators

Read the MSDS and Risk assessment for every chemical to alert you to specific hazards before use

Examples of particularly hazardous reactions include:

- Strong acid and bases, oxidising agents, metal powders and reducing agents (also concentrated sulphuric acid with wood, paper, etc.)
- Alkali metals and/or alkali earth metals with water, acids or some other solvents; thus sodium should not be used to dry such solvents as chloroform, carbon tetrachloride, or pyridine.
- Metal hydrides.
- Concentrated nitric acid with alcohol (reacts only after a latent period).

TOXIC CHEMICALS CLASS 6.1

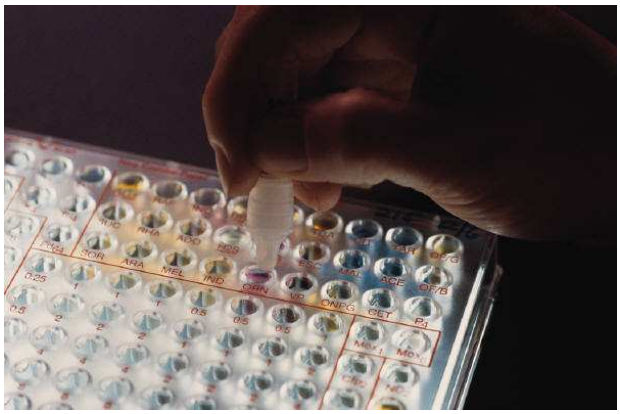
Very few chemicals are completely harmless. Because of the rapidity with which material may be absorbed through the respiratory passages, inhalation is a particular hazard. Fume hoods should always be used for procedures in which toxic vapours or gases may be emitted. **Before handling any chemical for the first time, consult the MSDS and Risk Assessment and follow the recommendations for safe handling.**

POISONS (SCHEDULED SUBSTANCES)

- Poisons are substances listed in Schedules 1 – 9 of the Drugs, Poisons and Controlled Substances Act.
- Labels must conform to the requirements of the Drugs, Poisons and Controlled Substances Act.

Biological Aspects of Laboratory Safety

It is the Laboratory supervisor's responsibility to ensure all persons working with micro-organisms have received basic training in the handling and storage of micro-organisms and this training recorded in Section 8 of the research group specific lab manual.



The organisms used for research and teaching at the Bendigo campus are either Risk Group 1 or Risk Group 2 organisms and therefore laboratory facilities should meet the standard for Containment Level 2. The organisms imported by the School of Pharmacy do not exceed Risk Group 2, but need some added precautions (eg use of Biohazard Cabinet and strict controls on usage and disposal) to satisfy AQIS requirements. A PC2 laboratory is available for laboratory work requiring higher levels of containment. (See below for Guidelines for work in the PC2 Laboratory).

GENERAL

- Treat all microbial cultures as potential pathogens which may be hazardous to health.
- All cultures must be correctly labelled with their name, the organism, the date and incubation temperature. Label underside of petri dishes (if the lid comes off you don't know what the plate is).
- All instruments used for transfer or subculturing of microbes must be sterilised before and after use. With pipettes, after use they should be placed in disinfectant supplied. Loops, needles, etc. must be flamed before and after each manipulation.
- Used cultures and any other infected material which are no longer required should be placed in suitable containers for autoclaving and disposal.
- Microscope slides carrying viable material should be placed into jars of disinfectant.

HANDWASHING:

Laboratory personnel must wash their hands with disinfectant cream (Hexifoam)

- on leaving the laboratory for whatever reason
- before and after completion of a task in a biological safety cabinet, even if gloves are worn
- after discarding gloves (which may have minute holes)

DECONTAMINATION OF GLASSWARE

All glassware exposed to micro organisms or imported biological materials, as defined above, is to be autoclaved at 121^{o}C for at least for 30 minutes before washing.

FREEZE DRIED CULTURES:

Ampoules of freeze dried cultures should be opened in a biohazard cabinet. Score ampoule with a glasscutter or file over the area containing the cotton wool plug. Wrap ampoule in cotton wool soaked in 70% ethanol to sterilise the surface AND to protect the operator. Squeeze out excess alcohol. Open ampoule by carefully applying pressure to break ampoule at score mark.

PREVENTION OF ACCIDENTAL NEEDLE-STICK INJURIES

- Sharp waste generated in laboratories should be placed in labelled sharps containers.
- Disposable needles should never be removed from syringes or other appliances after use unless a purpose made tool is used eg specialised sharps container.

- Do not re cap needles
- Needles should not be purposely bent, broken by hand or nipped because these procedures themselves can cause accidental puncture

GUIDELINES FOR THE USE OF DISINFECTANTS

See Appendix 3

GUIDELINES FOR WORK IN THE PC2 LABORATORY

See Section 6 of the Lab Safety Manual

HANDLING HUMAN BLOOD AND OTHER POTENTIALLY INFECTIOUS PRODUCTS

If your research work requires the use of body fluids from human and animal sources, please refer to the university policy on handling blood specimens at .http://www.latrobe.edu.au/hr/ohs/ohs-manual/human-bio-specimens.pdf. A copy of this Safe Operating Procedure should be kept in Section 4 of the Lab Safety Manual.

Use of Radioactive substances in laboratories

Anyone intending to work with radioactive materials should first consult with the Radiation Safety Officer (Professor Bob Seviour) about correct procedures. You will need to be registered as a 'radiation worker' and wear a film badge if you are doing radioactive work. Please see Section 6 of the Lab Safety Manual for further details.

Security arrangement for working after hours

Normal Opening and Closing times Applied Science 1 & 2 are

During semester:	Monday – Thursday	7 am to 7 pm.
	Friday -	7 am to 6 pm.
Between semesters:	Monday – Friday	7 am to 6 pm.

It is the responsibility of all staff and students to obtain permission from their supervisor to work in a laboratory or workshop or high risk area outside of normal hours (8.00 am – 6.00 pm). This is not necessary for low risk activities such as office work. Please refer to University Policy for after hours work - http://www.latrobe.edu.au/ohs/manual/Solo_work.pdf.

Staff and students intending to conduct laboratory or workshop work in University Buildings between 10.00 pm and 07.00 am Monday to Friday, and at any time on Weekends or Public Holidays should ring 8999 or 1800 077 043 as soon as they enter the building to advise the Duty Security Officer of their presence. Similarly, you should advise when you intend to leave. By doing this, and where possible providing a telephone contact number, the Duty Security Officer can check on your well being while conducting security patrols of the campus.

In any emergency, ring 8999 (24 hour service).

If you intend to work after hours you must use your swipe card to re enter the building before 6pm to register your presence in the building. Our security system is programmed to count the number of people who are in the building (swiped in) after hours and to count them out. If a person who has not swiped in leaves the building after 6pm, the last person remaining in the building will set off the movement sensors (active on every floor). A security guard must then investigate. This is most annoying for both the security guard and the person who sets off the sensors who is then obliged to accompany security outside the building and swipe in again

Further Training & Information

At the start of each semester, an OHS safety induction session will be held for new staff, and research students. For details on what is covered in the induction, and for staff and postgraduate students who are involved in teaching undergraduate classes; see Appendix 4 titled

PROCRDURE FOR THE TRAINING AND RECORDING OF TRAINING OF STAFF AND STUDENTS IN SAFETY REGULATIONS AND THE USE OF HAZARDOUS SUBSTANCES AND DANGEROUS GOODS

Appropriate training must be given by the lab supervisor or their nominee before potentially hazardous substances, equipment or processes are employed and an individual record of the training kept in that research groups' Lab Safety Manual, Section 8.

Other training courses, both in house and those provided by La Trobe's central OHS Unit are advertised from time to time. Participation in these courses should also be recorded on the individual training record so that students in particular have a complete record of training attended.

Appendix 1

Spills preparedness

Before using chemicals designated as Dangerous Goods or Hazardous Substances, ensure an appropriate MSDS and Risk assessment for the process to be undertaken are available and review this information.

DETERMINE AT THIS POINT WHETHER THE QUANTITIES OF MATERIALS BEING USED COULD NECESSITATE AN EVACUATION OF THE LAB OR THE BUILDING IF A WORST CASE SPILL OCCURRED. A list of chemicals currently held by the department which are designated as very toxic by inhalation is available in the main store (see Barb Udale). If you intend to work with such a chemical you must

- re-evaluate procedure to see that all possible risk reduction strategies have been considered
- alert others in the vicinity to the potential hazard (especially demonstrators in undergraduate classes)
- review emergency evacuation procedures.

If the materials and quantities to be used are such that a spill can be managed without the need to evacuate:

- ensure that the Spill Control Kit is nearby and easily accessible.
- consult the chart on the wall near the spill kit to identify which treatment material to use and ensure that the neutralising material is present in sufficient quantity if needed.
- if the MSDS specifies a spill treatment not included in the standard spill kit then consult Store Manager (Barb Udale) before using the chemical.

Dangerous Goods and Hazardous Substances must not be dispensed in containers exceeding 500mL in volume in teaching laboratories. Spill kits in all laboratories contain sufficient materials to deal with a spill of 500mL in volume. If volumes greater than 500mL are required: before commencing work, discuss the matter with the Store Manager so that sufficient quantities of spill treatment material can be provided.

Spill treatment procedure

- Notify your supervisor and or the spill response team ext 7399 (see current safety personnel list on page 4)
- If not already known, identify the spilt chemical
- Refer to the MSDS for special warnings and treatments
- Isolate spill area.
- Ensure you are wearing the recommended Personal Protective Equipment before commencing

<u>LIQUIDS</u>

- Once identified, confirm that the acid, caustic or solvent is listed on the relevant chart and how many containers are required to absorb a 500mL spill.
- Choose the appropriate treatment

Acid spill use sodium carbonate (soda ash) from the bucket supplied.

Caustic spill use Spill-X-C

Solvent spill use Spill-X-S (activated carbon).

- First encircle, then cover the spill with the treating agent. Take care to avoid splashing or raising dust.
- Mix the treating agent into the spill using the spatula supplied in the Spill Kit.
- Continue adding agent and mixing until the liquid is totally absorbed, or neutralization reactions have subsided, leaving a solid mix for acids and caustics, or a dry powdery residue for solvents.

SOLIDS & LIQUID TREATMENT RESIDUES

- Use the scraper and pan provided with Spill Kit to gather up the solid residue and transfer into a bag or container labelled with the chemical name. Take care to avoid raising dust.
- Decontaminate spill area with water and detergent.
- If a spill occurs between 9am-5pm, the labelled bag containing collected solid residue must be delivered to the Chemical Store Manager in AS1 room 4.15.

Report the incident by telephone to the campus OHS office 5444 7901.

Within 24 hours, an incident report form must be submitted to Sue Schrieber or Barb Udale who will forward the report to the Campus OH&S Officer via the Head of School / Department.

- If a spill occurs after hours, the labelled bag containing collected solid residue is to be held in an operating fume hood until next working day, **Report the incident initially to Security Office telephone 8999 or 1800-077-043. Within 24 hours, an incident report form must be submitted to OH&S Officer, through the Head of School / Area**

- Download report forms from *http://www.latrobe.edu.au/hr/forms/incident_report.pdf*

  Forms are also held in Section 9 of Lab Safety Manual

MERCURY SPILLS PROCEDURE

Mercury creates a poisonous vapour and must be cleaned up immediately.

- Contact Technical Staff level 4 in AS1 inform location of spill
- Keep area of spill isolated.
- Leave mixture of sawdust and zinc on to the spilled mercury for 24 hours after spill
- Carefully brush into labelled waste container using special dustpan and brush.

Deliver waste to Barb Udale for disposal

BIOHAZARD SPILLS PROCEDURE (For Blood, Urine, Sewage and Other Biological Fluids)

- Cover spill with cloth or paper towel and 5% Biogram.
- Leave 15 mins.
- Put on disposable gloves and sweep cloth and debris into autoclave bag, using or a strong piece of cardboard. DO NOT USE dust pans and brushes unless these can be autoclaved or disinfected.
- Swab area with routine bench disinfectant (0.5% hypochlorite).
- Sterilise waste materials by autoclaving before disposal.

Appendix 2

TIPS FOR COMMONLY USED DANGEROUS MATERIALS/ PROCEDURES

- Always add ACID TO WATER when diluting strong acids.
- There is a delay of about 12 hours before the painful effects of contamination with HYDROGEN FLUORIDE either as liquid or aqueous solution are felt. Wash off with plenty of water and get medical treatment at once.
- Toxicity of chemicals: Lead, mercury, arsenic, chromium, beryllium, antimony, selenium and manganese are common toxic metals. In general, metals are more hazardous in compound and the more soluble the compound the more toxic it is likely to be.
- Mercury vapour is a cumulative poison: mercury has an appreciable vapour pressure at room temperature and it should never be allowed to stand exposed in the laboratory. The technicians should clear up any spillage of mercury immediately.
- When carrying out a solvent extraction in a separating funnel, release the pressure frequently. Point the funnel away from your eyes (and other people's) and do not carry out this work near a naked flame.
- When cleaning and drying apparatus remember that only a very small percentage of vapour may be required to produce an explosive air - vapour mixture.
  e.g. 5 ml of benzene evaporating in a drying oven can produce an explosive mixture.
- Acetone - air mixtures explode violently and readily and it is dangerous to clean apparatus with acetone and then oven dry it.
- Should any chemical be spilled on your skin, wash the area immediately with copious amounts of soap and water.
- Never use organic solvents such as acetone or alcohol to wash an organic chemical from the skin; such solvents may actually increase the rate of absorption of the chemical into the skin.
- Avoid inhalation of fumes and vapours of chemicals and solvents.
- Do not pipette by mouth. Use the pipette filler, which is provided.
- Never pour corrosive liquids at or above eye level eg when filling a burette.
- Winchesters (2.5L bottles) should be transported in carriers, especially those containing hazardous liquids. A full Winchester can break when lifted by the neck
- Damaged glass apparatus should be rejected; even a scratch and particularly a "star" crack, can cause failure under high vacuum.

Appendix 3

GUIDELINES FOR THE USE OF DISINFECTANTS

All work surfaces and equipment (Balances, centrifuges) where bio hazardous materials have been handled should be wiped down on completion of work with 0.5% hypochlorite solution. Where known pathogens are handled wipe down with 5% Biogram as well.

Alcohols, phenols and hypochlorite are the three disinfectants used in the microbiology laboratories. If there is a need for other disinfectants, information on their use may be obtained from AS2243.3 (1991) Safety in Laboratories, Part 3: Microbiology.

Chlorine Compounds This refers to inorganic or organic compounds which produce hypochlorite in solution. Active against Gram positive and Gram negative bacteria; moderately active against tubercule bacilli, all types of viruses and spores. As strong aqueous solutions and powders may be chemically unstable, the supplier should be consulted regarding storage limits. Sodium hypochlorite solutions containing 13 14% available chlorine deteriorate rapidly (e.g. to 10% in a month) but weaker stock solutions (1 5%) are more stable. The activity is greatly reduced or abolished by all types of organic matter e.g. blood. Some metals (e.g. aluminium) are corroded by high concentrations of hypochlorite and stainless steel instruments may be damaged by the high concentrations recommended for virus disinfection (0.5% hypochlorite).

> Usage: Benchtops: 0.5% solution used. 1 in 10 dilution of household bleach (approx 5% w/v) (White King: 125ml per litre of water) Pour bleach on bench, wipe over whole bench top and allow to stay for 15 minutes. The drying time of approx. 10 to 15 minutes is considered sufficient time for disinfection to occur.

Clear Soluble Phenolics (eg Biogram) Active against Gram positive and Gram negative bacteria. Formulation may influence relative activity against particular species or groups; this formulation is active against tubercule bacilli. They are inactive against spores. Prepared, unused solutions of Biogram can be stored for a maximum of 14 days in open containers or 28 days in closed containers.

> Usage: Bench tops: 5.0% solution used.
>
> Instruments: (scissors, forceps etc): 2% solution of Biogram .

Alcohols (ethyl alcohol, isopropyl alcohols) are Active against all bacteria, including tubercule bacilli, and against viruses but Inactive against bacterial spores. Ethanol must be diluted with water to give 70% alcohol by volume; isopropyl alcohol is sometimes used at slightly lower concentrations. Methylated Spirits may be used instead of Ethanol. Alcohol concentration is reduced by evaporation in an open container. Activity is also reduced when the alcohol precipitates accompanying protein on the organisms.

Main Uses:

- Disinfection of hands in combination with a non volatile antibacterial agent, such as chlorhexidine.
- Packaged swabs, usually moistened with isopropyl alcohol, are suitable for injection sites.
- Ethanol (diluted as above) is sometimes used for disinfection of clean objects or surfaces, e.g. trolley tops.

NOTE: Alcohols are flammable liquids.

Appendix 4

PROTOCOL FOR THE TRAINING OF STAFF AND STUDENTS IN SAFETY REGULATIONS AND THE USE OF HAZARDOUS SUBSTANCES AND DANGEROUS GOODS

Training for Undergraduate Students

Provision of General safety Information

At the start of each semester, all students will be issued with a copy of the document *OH&S Guidelines for Undergraduate students*, which will be incorporated into the laboratory notes or issued as a separate document. **Documentation:** students are asked to sign a statement declaring that they have been issued with the Guidelines and agree to conduct their work in accordance with them at all times.

Training in use of Material Safety Data Sheets and Risk Assessments

Chemistry 1A (CHE11C1A) The first practical session is devoted to material safety data sheets (MSDSs) and risk assessments (RAs). Students are required to read the MSDSs for a selection of HS and DG that they will encounter

Student project (SCI31PRJ/SCI32PRJ). Supervisors have the responsibility of instructing students in the reading of MSDS. They also have responsibility for ensuring that students consult the relevant MSDS for the all HS and DG they use.

At the start of each semester, in practical subjects where HSs and DGs are used, the use of MSDSs and RAs will be revised with a sample of each shown on overhead such that students who may have missed the initial introduction to these documents will gain the same understanding of their use and importance. If any student misses this session they will be given a sample MSDS and RA to read in their own time and follow up any questions they may have with a demonstrator.

Provision of Safety Information Specific to individual Laboratory Classes/Experiments

In all practical manuals, all potential hazards (including HS and DGs) involved in each session, will be identified and the appropriate risk control measures (eg personal protective equipment) specified. There may be questions relating to safety issues to be answered in each practical report.

All undergraduate training records will be filed under the subject name in the folder marked "OHS training records" located in the technician's area. At the end of each year the records will be collected and retained for three years.

Training for New Staff and Research Students

At the start of each semester, an OHS safety induction session will be held for new staff, visitors and research students to include:

- Introduction to the structure of safety systems in the school including
    - individual roles and responsibilities
    - sources of OHS information and training
    - how to use the lab safety manuals to ensure compliance with OHS legislation
    - how to identify the need for, provide and record further individual training

- Issue and discussion of the document: *School of Pharmacy and Applied Science, OHS guidelines for Staff and research students*

- Explanation and demonstration of the use of MSDSs and RAs
- Explanation and demonstration of emergency procedures including evacuation and treatment of chemical spills
- Outline the procedures for training undergraduate students in lab safety issues

Students and staff will be asked to sign a document listing the procedures covered in the training session and declaring that they have been instructed in these procedures.

Visitors

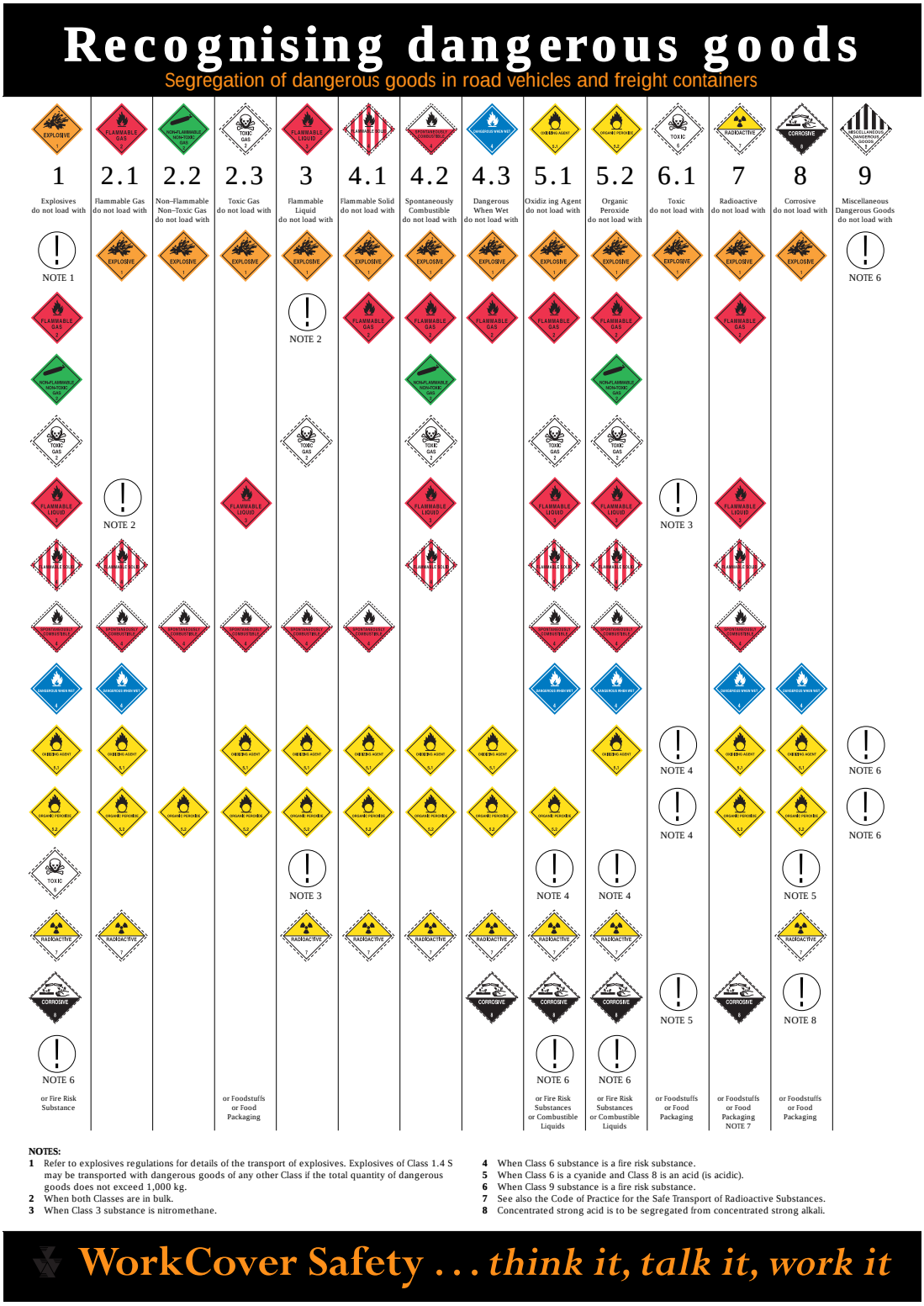
All visitors will be give a copy of these guidelines and have the major points explained at a' mini induction' given by the lab manager within the first two weeks of arrival. The lab manager will also discuss the nature of the work to be undertaken during the visit and make a recommendation to the supervisor regarding any risk assessments or training that might be necessary.

Policy last reviewed and accepted by FSTE lab safety Committee Bendigo, Feb 2009

Appendix 5

"RECOGNISING DANGEROUS GOODS" guide to segregation of Chemicals.

Download and print from the Worksafe website



FSTE Chemical Risk Assessment Process: Revised November 2008

The following procedure uses risk classifications (or **risk phrases)** determined by the manufacturer of a chemical, to distinguish between chemicals for which the associated risks can be adequately controlled by the application of **generic risk controls**; and those that may require individual assessment to ensure safe use.

Where the generic risk controls set out below are understood and applied routinely by all chemical users, the vast majority of chemicals will require no special action to reduce risks to an acceptable level. Sometimes the chemical in use may not require the use of safety glasses; or be used in such dilute amounts that risks are negligible; however, by adopting the mandatory use of safety glasses and lab coat etc, these decisions no longer need to be made on a case by case basis which was required under the previous risk assessment procedure. It is expected that laboratory supervisors* may vary the level of adherence to generic controls where there is a justifiable and documented reason for doing so eg relaxation of rule on safety glasses in laboratory sessions where there are no substances or processes in use that could reasonably be expected to cause eye damage. Conversely it is expected that where the circumstances of use of a chemical could reasonably be expected to increase risk of injury beyond normal expectation, the supervisor will adopt more stringent safety controls and or seek advice of a safety professional **

Adherence to the generic risk controls will be monitored through annual laboratory inspections and randomly throughout the year. If the generic risk controls are not being achieved in your work area; contact your safety officer for advice and assistance. If systematic and ongoing non compliance with generic risk controls is identified, the work area will be required to maintain a system of individual chemical risk assessments as an alternate means of complying with regulations.

Special Conditions:

Where chemicals are mixed to create new compounds, the supervisor of the experiment must be aware of all products formed and ensure safety information of products is also available and acted upon as for the ingredient chemicals.

Where novel products of unknown properties are synthesised, all products should be treated as if the highest level of safety consideration is required.

Chemicals with safety or security considerations other than dangerous goods will be identified at the point of ordering by the chemical store manager and appropriate controls applied at this point eg

- Hazardous substances
- Scheduled poisons
- Carcinogens
- Chemical weapons precursor
- Drugs of dependence & precursors

* The ‘supervisor’ is understood to be the person next in line management for staff, the subject coordinator for undergraduate classes and the Principal academic supervisor for research staff and students.

** A safety professional is a person employed by the University, whose position description expressly includes the giving of (expert) advice on safety matters .

Generic risk controls A-E

A All Dangerous goods are stored in accordance with the principles set out in the Dangerous Goods Storage and Handling regulations 2004. If unsure check with your safety officer. Of particular note is the need to segregate chemicals by class code and use of specialised storage cabinets where quantities warrant this.

It is recommended that the following useful references for storage advice are displayed in all areas where chemicals are used or stored.

- Table 1 p19 AS/NZS 2243.10: 2004. Titled… "QUANTITIES OF CHEMICALS PERMITTED TO BE STORED IN A LABORATORY OTHER THAN IN A CHEMICAL CABINET"

- Work cover's Dangerous good identification chart "Recognising dangerous goods" available in colour at http://www.worksafe.vic.gov.au/wps/wcm/connect/WorkSafe/Home/Forms+and+Publications/Publications/import

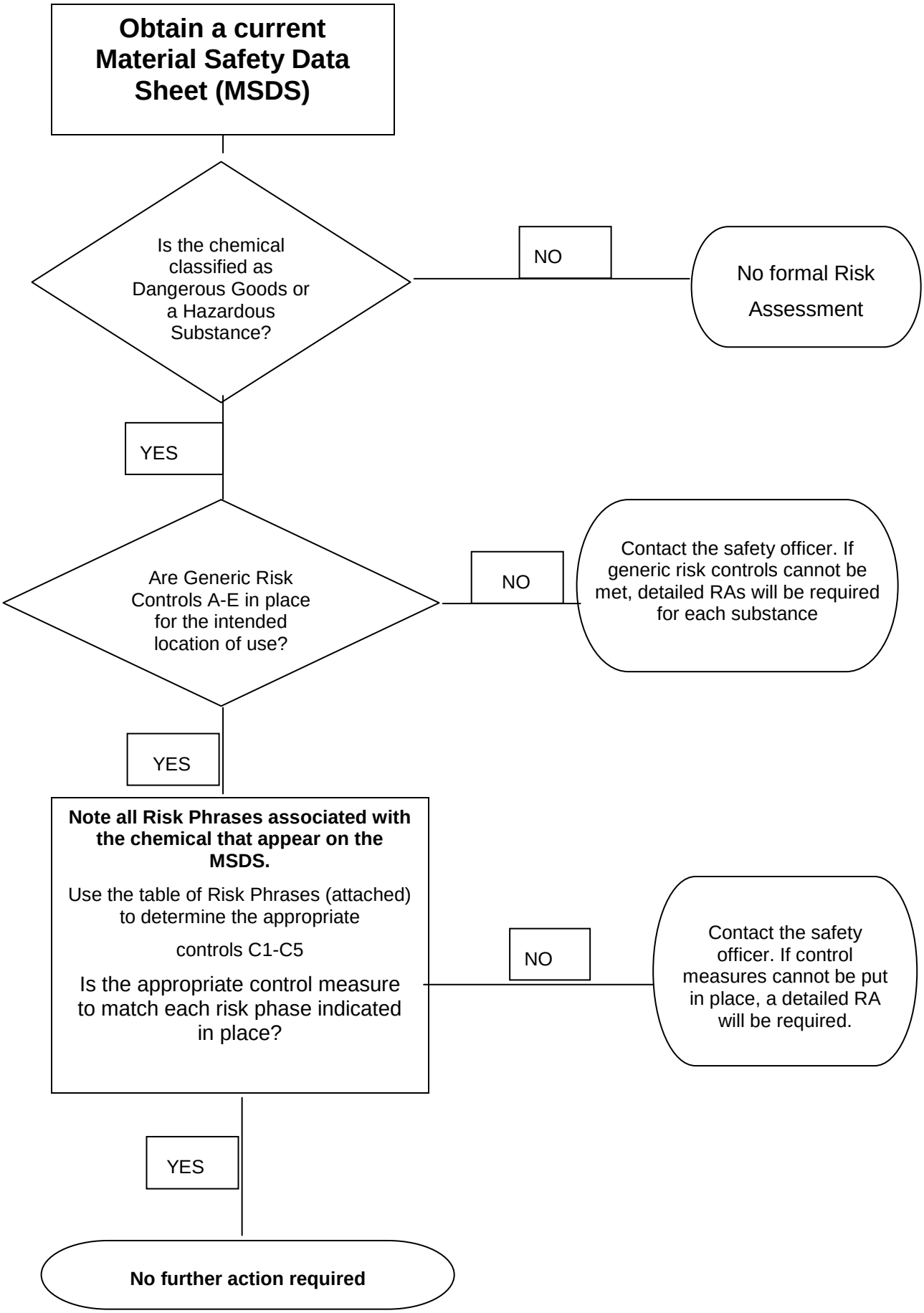
B A laboratory coat, safety glasses, protective gloves (as per MSDS) and enclosed footwear will be worn by all persons at all times when handling chemicals at concentrations capable of causing skin or eye damage; in or outside a laboratory. Ensure accidental transfer from gloves and lab coat does not cause cross contamination eg to door handles, telephones etc

C Fire protection equipment, safety showers, eye wash stations and spill kits are installed and maintained close to location chemicals are stored and handled.

D No food or drink is stored or consumed in locations where chemicals are stored or handled.

E Ensure appropriate waste disposal methods are in place and understood. See La Trobe Safety manual for details.

Preliminary Chemical Risk Assessment Process



	Risk phrase (from MSDS)	Control recommended
R01	Explosive when dry.	C1,
R02	Risk of explosion by shock, friction, fire or other sources of ignition.	C1
R03	Extreme risk of explosion by shock, friction, fire or other sources of ignition.	C5
R04	Forms very sensitive explosive metallic compounds.	C1
R05	Heating may cause an explosion.	C1
R06	Explosive with or without contact with air.	C1
R07	May cause fire.	C1
R08	Contact with combustible material may cause fire.	Gen
R09	Explosive when mixed with combustible material.	C1
R10	Flammable.	C1
R11	Highly Flammable.	C1
R12	Extremely Flammable.	C5
R14	Reacts violently with water.	C5
R15	Contact with water liberates extremely flammable gases.	C5
R16	Explosive when mixed with oxidising substances.	C1
R17	Spontaneously flammable in air.	C5
R18	In use may form flammable/explosive vapour air mixture.	C5
R19	May form explosive peroxides.	C1,C2
R20	Harmful by inhalation.	C3
R21	Harmful in contact with skin	Gen
R22	Harmful if swallowed.	Gen
R23	Toxic by inhalation..	C3
R24	Toxic in contact with skin.	Gen
R25	Toxic if swallowed.	Gen
R26	Very toxic by inhalation.	C5
R27	Very toxic in contact with skin.	C5
R28	Very toxic if swallowed.	C5

R29	Contact with water liberates toxic gas.	C5
R31	Contact with acids liberates toxic gas.	C5
R32	Contact with acids liberates very toxic gas.	C5
R33	Danger of cumulative effects.	C3,C4
R34	Causes burns.	Gen
R35	Causes severe burns.	C5
R36	Irritating to eyes	Gen
R37	Irritating to respiratory system.	C3
R38	Irritating to skin.	Gen
R39	Danger of very serious irreversible effects.	C5
R40	Limited evidence of a carcinogenic effect .	C5
R41	Risk of serious damage to eyes.	Gen
R42	May cause sensitisation by inhalation. .	C3
R43	May cause sensitisation by skin contact.	Gen
R45	May cause cancer.	C5
R46	May cause heritable genetic damage.	C5
R48	Danger of serious damage to health by prolonged exposure.	C5
R49	May cause cancer by inhalation.	C5
R50	Very toxic to aquatic organisms.	C4
R51	Toxic to aquatic organisms.	C4
R52	Harmful to aquatic organisms.	C4
R53	May cause long term adverse effects in the aquatic environment.	C4
R54	Toxic to flora.	C4
R55	Toxic to fauna.	C4
R56	Toxic to soil organisms.	C4
R57	Toxic to bees.	C4
R58	May cause long term adverse effects in the environment.	C4
R59	Dangerous for the ozone layer.	C4
R60	May impair fertility	C5

R61	May cause harm to the unborn child.	C5
R62	Possible risk of impaired fertility.	C5
R63	Possible risk of harm to the unborn child.	C5
R64	May cause harm to breastfed babies.	C5
R65	Harmful: May cause lung damage if swallowed.	Gen
R66	Repeated exposure may cause skin dryness and cracking	Gen
R67	Vapours may cause drowsiness and dizziness	C3
R68	Possible risk or irreversible effects	C5

Ref: *Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)] 3rd ed.*

Control no.	Control description
Gen	Generic risk control measures only required
C1	Special Storage or reactivity hazard exists. Store and handle as specified in MSDS. Consider completing a detailed Risk Assessment (eg if large quantities involved).
C2	Chemical requires periodic testing for stability. Refer to LaTrobe OHS manual.
C3	Use a fume cupboard/ dust mask or respirator as specified in MSDS
C4	May cause environmental damage. Check MSDS and ensure an appropriate method of waste disposed is in place for product and container
C5	Detailed risk assessment and or Safe Operating Procedure required

Laboratory Group Training Record

The persons named below have read this procedure and understand their obligation to comply with Generic Risk Controls (GRCs) in order to maintain approval to implement this procedure. Continued non compliance with GRCs will result in the research group being required to complete individual risk assessments on all dangerous goods used by the group.

Name	Signature	Date