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GENERAL HEALTH AND SAFETY MANUAL

for all staff, students, users and visitors to the CMCA

Centre for Microscopy Characterisation and Analysis

http://cmca.uwa.edu.au

HEALTH AND SAFETY MANUAL

GENERAL STATEMENT ON HEALTH AND SAFETY MANAGEMENT

The Centre for Microscopy, Characterisation and Analysis (CMCA) fully endorses the Work Health and Safety Policy of the University of Western Australia. This health and safety manual supplements the central policy to provide and maintain healthy and safe working conditions, equipment and systems of work. We shall, so far as is reasonably practicable, ensure that no persons are put at risk from activities carried out under the auspices of the University.

Allocation of resources, information, instruction, training and supervision shall be provided as necessary to achieve this.

This manual and its associated systems of work shall be kept up to date to take account of changes in local activities and to promote a process of continuous improvement and full compliance with relevant health and safety and related legislation.

Operational health and safety management shall be continually monitored and reviewed at least quarterly by a Health and Safety Committee chaired by a member of senior management.

Reporting processes shall be developed and maintained to ensure that relevant information is made available to the local Health and Safety Committee.

A copy of this statement and manual shall be made publically available via CMCA website.

Endorsed by:

Print Name:	Signature:	Date:
David Sampson (Director)		23 March 2015

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1 PURPOSE

Persons who conduct a business or undertaking have the primary duty to ensure the health and safety of workers and other persons at the workplace. This requires the person to ensure that risks are eliminated so far as is reasonably practicable. If it is not possible to eliminate the hazard then minimise the risks as far as is reasonably practicable. This manual has been prepared to provide procedural guidance relating to the management of health and safety. It contains information which describes a framework for developing safe working practices and operation of a safe system of work. It also reminds workers of their personal responsibility to follow health and safety guidelines and to maintain an active safety awareness at all times.

2 SCOPE

The contents of this health and safety manual apply to all persons who are authorised to carry out activities in the area to which it applies under the auspices of the University of Western Australia. They are required to work in accordance with this manual and any associated system of working. Confirmation of receipt and understanding of the contents of this manual must be recorded (ref Appendix A).

3 INTRODUCTION

Successful management of health and safety can only be effectively achieved when the participation of workers at all levels is built into all its processes for identifying and controlling risk. Everyone has a responsibility to co-operate with their colleagues to achieve a safe and healthy workplace, and to take reasonable care of themselves and others.

Safety management can be considered as a step-wise process which builds a framework which encompasses all activities carried out in the workplace and which promotes self-checking, review and continual improvement. It addresses the safety management in the workplace, the use of resources and carrying out individual activities.

In the management of health and safety there are defined roles of nominated individuals. They assist the senior manager; help to resolve health and safety issues and also report to the local Health and Safety Committee. Definitions of these roles can be accessed via the RESPONSIBILITIES section of this manual.

4 DEFINITION OF TERMS

4.1 Resources

People, equipment and substances used within the workplace.

Demonstrable competency
In some circumstances it is not possible or is difficult to verify formal qualifications, particularly when they were obtained many years previously. Workers must have received appropriate information, induction, instructions and training, be fit for duty and be deemed competent to safely carry out the task. Demonstrated knowledge, skills, ability and experience can all be collectively considered as an alternative assessment of competency but that assessment must be recorded and filed for reference.

4.2 Standard Operating Procedure (SOP)

This is a document which helps to minimise risk by identifying hazards, providing guidance for use and recording user competency regarding the operation of potentially hazardous equipment. It includes pre-operational checks, guidance for use, post-use guidance and forbidden uses.

4.3 Method Statement

This document contains the instructions for carrying out the job. It breaks the task down into discrete steps and includes who is responsible for each (i.e. operator, supervisor, manager). This document can account for safety aspects of the work by incorporating any control measures which have been identified in risk assessments. It can also be used independently as a stepwise instruction sheet to carrying out both one-off and routine tasks.

4.4 MSDS

Material Safety Data Sheet is an information sheet on the properties and hazards associated with chemical substances used in the workplace that contains essential information in the safe handling and storage of substances.

4.5 Hazardous substances

This includes chemicals which could be corrosive, known carcinogens or toxic. It also includes pathogens, solvents, gases and others. For further information regarding hazardous substances contact UWA Safety, Health and Wellbeing.

5 LEGAL REQUIREMENTS AND IMPLICATIONS

A system of working which reflects the legal requirements placed on the University and simultaneously provides documentary evidence of compliance is a vital component of a Safe System of Work.

Day to day monitoring of compliance is the responsibility of all those with managerial responsibility. Managers and the local Health and Safety Committee should also use reports of injury, near misses and sickness linked to work to determine whether existing arrangements require modification in order to minimise recurrence. The effectiveness of local safety management should be co-ordinated via the Health and Safety Committee which calls for and reports on the outcome of regular inspections or self-auditing.
Refer to http://www.safety.uwa.edu.au/management/monitoring

5.1 Legislation

5.1.1 Work Health and Safety Act 2013

This is the principal legislation to which this manual relates. This legislation places higher level responsibilities upon certain individuals, particularly Officers. It refers to non-transferable work health and safety duties related to specific roles and standards of care associated with all activities conducted within a workplace.

A person can have more than one duty and more than one person can have the same duty. Under these circumstances, each person must discharge the duty to the extent that they have the capacity to influence and control the matter. Duties imposed on a person to ensure health or safety requires

the person to eliminate risks to health and safety, so far as is reasonably practicable, and if it is not reasonably practicable to eliminate, then to minimise those risks so far as is reasonably practicable.

5.1.2 AS/NZS 4801: OHS Management System - Specification with Guidance for Use

This provides guidance through which the University seeks to:

(a) Implement, maintain and improve its Occupational Health and Safety Management System (OHSMS)

(b) Assure itself of its conformance with its stated Occupational Health and Safety policy.

(c) Demonstrate such conformance to others.

(d) Obtain certification of its OHSMS by an external organisation.

(e) Make a self-declaration of conformance with the Standard.

5.1.3 ISO31000: Risk Management Standard

This was used as a reference for guidance in the development of the UWA approach to safety management of hazards through the assessment and control of risk.

5.2 Record Keeping

Adequate record keeping is essential because the absence of such records could be regarded as not having fulfilled the required duty of care. Records also provide the means by which it is possible to demonstrate due diligence. Evidence of review, operation of local Health and Safety Committees and involvement by those responsible for directing work and activities are key factors in determining that a safety management system is pro-active, responsive and up-to-date.

The University uses AS/NZS 4801 OHSMS Standard as its means of planning, conducting and monitoring safety performance in all areas.

Key documents required for examination by auditors are:

5.2.1 The UWA Safety and Health Risk Register

Refer to www.safety.uwa.edu.au/safety_management page and see 'UWA Safety and Health Risk Register' *

5.2.2 This Health and Safety Manual

This manual shall be the principal reference for safety management in the workplace. *

5.2.3 Standard Operating Procedures

Combined safety assessments and training record documents describing the safe use of hazardous equipment. *

5.2.4 Evidence of competency and training

Either by qualification or by experience and well established demonstrated knowledge that individuals are able to use resources and conduct work safely. Evidence of safety induction for all workers must be recorded. *

5.2.5 A prescribed process for the planning of tasks and activities

A documented process for planning of otherwise unassessed activities which may be such as to require documented description and specific risk assessment via a standardised process. **

5.2.6 Evidence of use of monitoring

This includes area safety inspection checklists, self-auditing and/or intra-University auditing to the adopted AS/NZS 4801 standard. **

5.2.7 Evidence of regular review

This includes health and safety committee meetings, reporting and implementation of improvements and an annual (or more regular if required) review of this Health and Safety Manual. **

* Assistance can be accessed via the UWA Safety, Health and Wellbeing website by provision of pro-forma documents.

** Sections of this manual are dedicated to these items

6 RESPONSIBILITIES

Details of health and safety responsibilities for Deans, Heads of Schools, Directors of Centres or Sections, Supervisors, Health and Safety Representatives, School Safety Officers, Building Wardens, First Aid Officers, employees, students, contractors and visitors are available via the UWA Safety, Health and Wellbeing website.
Refer to http://www.safety.uwa.edu.au/policies/responsibility_and_accountability

6.1 Duty of Care and Due Diligence

Responsibilities extend beyond minimum compliance with statutory obligations. Every individual owes a duty-of-care to each other person they encounter in their activities. Health and safety legislation places specific responsibilities on individuals including the requirements of due diligence as shown in the following table:

Duty holder	**Responsibilities**
A person conducting a business or undertaking:	Must ensure, so far as is reasonably practicable, that workers and other persons are not put at risk from work carried out as part of the business or undertaking.
Persons conducting a business or undertaking who:	Must ensure, so far as is reasonably practicable, that:
• manage or control a workplace	• the workplace, including entry and exit and anything arising from the workplace are without risks to health and safety
• manage or control fixtures, fittings or plant at workplaces	• the fixtures, fittings or plant are without risks to health and safety
• design, manufacture, import, supply or install plant, substances or structures	• the plant, substance or structure is without risks to health and safety

Duty holder	Responsibilities
Officers:	Must exercise due diligence to ensure that the business or undertaking complies with the Work Health and Safety Act and Regulations. This includes taking reasonable steps to: • acquire and keep up to date knowledge of work health and safety matters associated with the operations of the workplace
	• ensure that the organisation has and uses appropriate resources and processes to eliminate or minimise risks to health and safety • ensure appropriate processes for receiving and considering information on incidents, hazards and risks and responding in a timely way • ensure that the organisation implements processes for complying with any duty or obligation of the body under the Act (e.g. incident notification, consultation, notice compliance) • verify the provision and use of resources

6.2 Health and Safety Committee

School Health and Safety Committees have an advisory and coordinating role for the management of local health and safety matters. Membership of Faculty Health and Safety Committees is expected to include a management and worker representative from each School Health and Safety Committee. This promotes good communication and ensures that matters which are unresolved at School level are referred upwards.

Efficient information feedback processes are the key to promotion of continual improvement (the most fundamental aspect of the AS/NZS 4801 Standard). Whilst managers play crucial roles in health and safety management, their involvement in regular meetings of the local Health and Safety Committee creates a formal and efficient forum for reporting and managing safety in the workplaces. It also assists in meeting their responsibilities as “Officers” by demonstrating due diligence (see RESPONSIBILITIES; Duty of Care and Due Diligence). All parts of the University are required to address health and safety matters through effective consultation and representation. A Health and Safety Representative or five or more workers may request the creation of a Health and Safety Committee. The workplace must respond by establishing the committee within two months of the request. The workplace may establish a Health and Safety Committee at any time on their own initiative. A member cannot be held liable in criminal or civil proceedings because of any acts, or omissions, done honestly and reasonably, pursuant to their role as a member of the committee.

Refer to http://www.safety.uwa.edu.au/management/committees for further information relating to:

- structure and representation
- terms of reference
- meetings and reporting schedule
- pro-forma committee documents (agenda, minutes and annual report)

The flow of information between health and safety committee members and workers should be regular and timely. This demonstrates that the University is improving health and safety by

addressing problems, which encourages workers to take an interest in their own health and safety and that of their colleagues. Minutes of meetings are to be distributed to all committee members and also to be made available to workers. Feedback meetings should be arranged to seek the views of workers affected by Health and Safety Committee decisions.

6.3 Resolution of Health and Safety Issues

It is important to address health and safety issues as soon as possible to minimise the risk of harm from hazards. The University has Notification and investigation processes which are provided to ensure that health and safety matters are reported, investigated and resolved effectively. These processes follow sequential, escalating steps for resolution of issues. WorkSafe WA can be notified if there is a risk of imminent and serious harm. Where a worker has a health and safety issue or problem that needs to be resolved the following steps shall be followed.

- Report the matter to Supervisor of the affected workplace for resolution.
- If not resolved, where there is a workplace Health and Safety Representative, the Supervisor shall advise and consult with the Health and Safety Representative with a view to developing a strategy for resolving the issue. Otherwise the Safety Officer for the area should be consulted.
- If the issue remains unresolved then the workplace Health and Safety Representative or Safety Officer shall refer the issue to the Head of School or Manager of the School, Unit or Centre for resolution.
- If the issue remains unresolved the workplace Health and Safety Representative or Safety Officer shall refer the issue to UWA Safety, Health and Wellbeing for resolution.
- If the issue remains unresolved then UWA Safety, Health and Wellbeing shall refer the issue to the University Safety Committee for resolution.

Further information: www.safety.uwa.edu.au/policies/resolving_safety_&_health_issues
www.safety.uwa.edu.au/incidents-injuries-emergency/notification

For further information regarding nomination, election and duration of position of employee Health and Safety Representatives contact UWA Safety, Health and Wellbeing for advice.

6.4 Delegation of authority to endorse safety related documents

Safety Management documentation often requires endorsement by the Head of School, the Director or equivalent as the manager who has overall responsibility for all tasks or activities carried out in or under the auspices of their workplace. This often places them in a difficult position when asked to endorse various activities in so far as they are not necessarily best qualified or experienced to make expert judgement regarding the content of associated health and safety documentation including assessment of risks.

A practical solution to this situation is to delegate signatory authority to a competent third party allowing them to sign by proxy (p.p.) whilst the Head of School still retains overall responsibility. The third party must be sufficiently conversant with the particular activities to make critical assessments on an objective and informed basis. Delegation of signatory authority must be in written form, stored for reference and reviewed regularly (e.g. every two years).

Documents which are used to propose work and analyse safety aspects are sometimes forwarded, for endorsement, to a committee or group with specific subject expertise in accordance with legal requirements. Whether the delegated signatory authority is to an individual or to an expert committee or group, the Head of School still has overall responsibility for the task or activity with the delegate in the role of an advisory resource. Such arrangements must be formally recorded.

For a more detailed examination of University policy on delegation of authority refer to:

Delegation definitions:	http://www.delegations.uwa.edu.au/procedures/definitions
Bands of delegated authority:	http://www.delegations.uwa.edu.au/bands
University delegations	http://www.delegations.uwa.edu.au/university_delegations
	(Select 'Head of School' under bands 5a and 5b)

7 SAFE CONDUCT

7.1 Required standards of behaviour

The following requirements meet the required standards of behaviour for all personnel in the workplace:

- Particularly in potentially hazardous workplaces, never adopt a casual attitude, reckless behaviour or run in the area.
- Always be conscious of potential hazards.
- Ensure that personal clothing is suited to the working environment conditions, e.g. safety closed in footwear - bare feet, thongs and sandals are prohibited in the many workplaces including laboratories, workshops, kitchens and others. Similarly, complying with all uniform requirements will ensure that clothing is safe.
- Use, store and maintain any protective clothing, devices and Personal Protective Equipment (PPE) which is appropriate to the type of tasks or activities giving due consideration to other adjacent work being carried out in the vicinity.
- Always exercise care when opening and closing doors and entering or leaving the workplace.
- Only handle, store or consume food or drink in suitable areas. Kitchen areas are designated as such and there are restrictions which apply to some areas such as workshops or laboratories.
- Only store food or drink in refrigerators which are intended for that use.
- Particularly in potentially hazardous workplaces, regard all substances as potentially hazardous unless there is definite information to the contrary and take additional care when carrying or moving them.
- Work shall only be carried out with the permission of a Supervisor.
- Never undertake any work unless the potential hazards of the operation are known and appropriate safety control measures exist or have been implemented.
- Any flame producing activity is not to commence until the immediate area has been cleared of dusts as many materials, which are non-flammable in a lump state, become volatile when in powdered form or as dust.
- All safety equipment must be labelled and maintained in good working order in accordance with the manufacturer's instructions.
- Report to the supervisor, any requirement for maintenance which may have been overlooked
- Keep all fire-escape routes completely clear at all times.

- Ensure that all safety equipment remains accessible to personnel at all times and never deposit items adjacently which could hinder easy access.
- Warning signs and barriers appropriate to the work being carried out are to be displayed at entrances to the workplace. If the work could be hazardous to other individuals then restricted access controls may be appropriate.
- Report incidents, injuries, near misses and hazards via the formal University reporting procedure www.safety.uwa.edu.au/forms/incident

7.2 No smoking policy

The University is "smoke free". Smoking is prohibited in, or at, all of the University's buildings, properties and workplaces. The ban on smoking applies to staff, students, visitors and contractors. Under the University's policy on smoking, the environment is to be free from tobacco advertising, promotion, sponsorship, sale, and both direct and indirect research funding from the tobacco industry. Accordingly, managers and supervisors shall promote and ensure compliance with the University policy on smoking. For further information refer to the UWA Safety, Health and Wellbeing website www.safety.uwa.edu.au/health/uwa_is_smoke_free_2012.

7.3 Electrical safety

Electrical equipment used on UWA property must be compliant and be visually inspected or electrically tested and tagged according to the electrical classification of the environment. Students and campus visitors are requested to have read and comply with the Electrical Safety Pamphlet which is located at http://www.safety.uwa.edu.au/topics/electrical-safety.

After the workplace has been determined as either electrically non-hostile or hostile, a regular inspection schedule can be developed. It is recommended that regular workplace safety inspections are synchronised with the checking periods which are required for electrical equipment.

7.4 Purchasing

All materials and equipment acquired by the workplace or by individuals for use at work, must comply with the standards, codes and regulations prescribed by law and by University requirements. Only those that can be safely accommodated and used within the workplace should be obtained. Individuals who arrange the purchase of material or equipment must obtain all necessary information to enable the associated risk to be assessed in order to maintain legal compliance. They must also comply with the requirements of the purchasing procedures. Only authorised signatories shall approve acquisitions. Details of authorised individuals are available from Financial Services.

7.5 Visitors and contractors

Visitors or Contractors must report to a reception point at the workplace. The member of the workplace who the visitor or contractor wishes to see must be contacted and asked to attend and meet their visitor or contractor and accompany them in the workplace. In the case of restricted access worksites, the contractor may be granted permission to enter the area for the duration of the work unless any circumstances occur which affect the health and safety of other people in the area. The policy in relation to Visitor Safety is available via the UWA Safety, Health and Wellbeing website: www.safety.uwa.edu.au/policies/visitor_safety

7.6 Services and facilities

The planning and undertaking of building, alteration and repair work, and the installation and maintenance of plant and equipment, by persons from outside the University needs to be

adequately controlled to ensure the health and safety of others people present in the workplace. The University has a health and safety policy for contractors, which requires that safety is managed through cooperation between the stakeholders. The University is responsible for all persons working on its property and must therefore verify that safety management is satisfactory.

7.7 Children

If children are brought onto University premises they must be under the immediate and close supervision of a parent or guardian at all times. Children are NOT permitted in hazardous areas such as laboratories, workshops, kitchens or any other area where the person in charge considers it to be inappropriate. For further information regarding the Children in the Workplace, including rights and responsibilities of parents refer to the policy on Children on the University Campus.

7.8 Safety off University premises

Many activities take place off University premises, including field trips and supervision in isolated areas. Staff, students and others have a responsibility to identify foreseeable risks and take appropriate action. Activities such as field trips require adequate competent supervision, first aid equipment training, appropriate protective clothing, closed footwear, sufficient communications arrangements and availability of emergency equipment. Persons who are responsible for fieldwork shall familiarise themselves with the University guidelines. Staff who are responsible for the placement of students shall also familiarise themselves with the University guidelines on placement of students. For further information regarding field work in rural and remote areas refer to the UWA Safety, Health and Wellbeing website: www.safety.uwa.edu.au/policies/field_work

7.9 Use of computer workstations

All workers must be aware of the hazards of repetitive work such as keyboard use or laboratory work and occupational overuse. Staff must take regular breaks and postural readjustments to avoid muscular strain, and report any symptoms to their supervisor. The UWA Safety, Health and Wellbeing team offers ergonomic assessments for all staff (including staff with 'working from home' arrangements) and these can be booked by contacting the UWA Safety, Health and Wellbeing team. The UWA Safety, Health and Wellbeing website offers further computer workstation ergonomic information at http://www.safety.uwa.edu.au/health-wellbeing/physical/ergonomics/workstation

7.10 Manual handling

All workers must be trained in the appropriate manual handling techniques for any hazardous manual tasks that they are required to perform in their jobs and not expose themselves or others to the risk of injury. Workers must be aware of, and utilise the mechanisms that exist within the workplace to:

(a) Identify hazardous manual tasks that exist,
(b) Assess the risks arising from the identified hazardous manual tasks that,
(c) Decide on the appropriate use of control measures.

If individuals feel that they are unable to undertake any manual handling task, because it is beyond their range of comfort and ability, they must seek assistance. In situations where individuals are required to perform new or unfamiliar manual tasks, supervisors should conduct a new risk assessment to identify any new potential hazards and implement and evaluate control strategies (i.e. mechanical solutions and/or training). Many injuries occur when workers undertake unfamiliar or non-routine tasks due to a lack of planning or risk assessment.

Where possible, mechanical handling equipment should be used (e.g. trolleys and fork lifts). All areas should develop and document a Manual Handling Risk Management Plan through consultation with

Health and Safety Representatives and assistance from the Occupational Therapists in UWA Safety, Health and Wellbeing.
For information regarding the University Policy on Manual Handling refer to the UWA Safety, Health and Wellbeing website: www.safety.uwa.edu.au/policies/manual_handling

7.11 Housekeeping

The maintenance of high standards of housekeeping in workplaces helps to prevent injuries. General tidiness includes such considerations as:

- Keeping floors tidy and dry
- Removing rubbish daily
- Avoid creating trip hazards such as trailing leads
- Keep work surfaces and resources such as fume cupboards, tidy, clean and free from equipment and hazardous substances that are not in use.
- Keeping aisles, exits, fire extinguishers, first aid kits and electrical cabinets free from obstruction
- Keeping glassware and breakables off the floor
- Informing contractors of workplace hazards that exist such as flammable liquids or combustibles
- Avoid exposing cleaners to hazards.
- If last to leave the workplace, make sure all equipment is turned off or left in a safe state and leave personal details with equipment/processes that need to be left running when unattended.

7.12 Use of social media

The separation which otherwise exists between personal and professional expression can become blurred. Comments which relate to individuals or workplace colleagues may endure over time making them highly visible. Interconnectivity between social media sites can result in unexpected distribution to a wider audience than in the off-line world. The inappropriate use of social media in either a professional or personal capacity, can violate the privacy, breach the security and harm the reputations of other employees, students and/or the University. Such activity may be determined as misconduct or serious misconduct, resulting in possible disciplinary action or termination of employment. Workplace health and safety legislation could also be contravened. For further information, refer to The University policy on social media. As a general rule: If it would normally be acceptable to express an opinion about something off-line, it is equally acceptable online. Express thoughts and opinions rationally, respectfully and appropriately.

7.13 Working alone

Individuals may occasionally be required to work alone on University premises. Under these circumstances there are special risks due to the lack of immediate assistance in the event of an accident or sudden illness. This guidance applies to working alone at any time but when planning after-hours working there are specific limitations on accessing workplaces and also on the types of work that may be undertaken.

Refer to “After-hours working” in this manual and also see http://www.safety.uwa.edu.au/health-wellbeing/physical/after-hours-working.

Health and safety legislation requires that if an employee is isolated from other persons because of the time, location or nature of the work then the employer must ensure that there is a means of communication available which will enable the employee to call for help in the event of an emergency and arrangements made to ensure regular contact. The maximum penalty for breaching this regulation is $25,000.

If you are required or intend to work alone you must have permission to do so from a Manager or Supervisor who has assessed risks associated with the planned activities, considered the availability of any potentially required support services and concluded that such working arrangements are acceptable. This may include addressing unattended reactions or experiments. In addition, disclosure and consideration of any medical conditions that may give rise to a dangerous or life threatening situation when working alone must be taken into account.

In all of the following cases, working alone is **not permitted** where:

- There is no readily accessible means of communication.
- Work which is remote or isolated from the assistance of others due to the location, nature or time.
- Operation or maintenance of hazardous equipment
- Handling of hazardous substances or use of large volumes of flammable solvents.
- Work which is too hazardous for a person to perform alone.
- Working with large or aggressive animals.
- Maintenance or adjustments on energised electrical or electronic systems.

Under the following circumstances, working alone **is permissible**:

- An authorised person is notified of the planned work, when it will commence and the expected completion time.
- Staff and students may work alone in office and other low risk environments.
- An easily accessible means of communication to gain assistance in an emergency is available.
- Undertake all required personal security measures e.g. lock doors, walk in well-lit areas.

The campus emergency number is 6488 2222. UWA Security (phone 6488 3020) offer a 24 hour escort service to vehicle or residences near the campus and also offer lectures on personal security. To request their assistance telephone 6488 3020 allow up to 20 minutes' notice for the escorting service.

WorkSafe WA provide guidance regarding working alone and how it influences the risk of harm or injury at
http://www.commerce.wa.gov.au/worksafe/content/safety_topics/Working_alone/index.htm

This information is also available at http://www.safety.uwa.edu.au/health-wellbeing/physical/alone.

7.14 After-hours working

An important consideration when working outside of normal working hours is the times of day when maximum internal and external support services are available in the event of an incident, injury or

illness. Such services include First Aid Officers, the Medical Centre, Facilities Management, Building Operations, external emergency services and UWA Safety, Health and Wellbeing.

In all workplaces, if you are required or intend to work outside of normal working hours, you must have permission to do so from a Manager or Supervisor who has assessed risks associated with the planned activities, considered the availability of any potentially required support services and concluded that such working arrangements are acceptable. In hazardous workplaces, where the type of work, the resources used and the risks to the health and safety of workers is significant, the periods of normal use should be restricted to 8:00 am - 5:00 pm on weekdays only.

Persons wishing to work outside normal hours may be required to provide a work plan that clearly defines the proposed task and limitations on that task outside normal working hours. They may need to fill in a log of arrival and departure times and advise Security on (+61 8) 6488 3020 or the appropriate number for laboratories not on the main University campus. If accessing the workplace after hours:

- Ensure that the doors of buildings are securely closed and locked after entering and exiting.
- Ensure that the doors to internal areas are secured on leaving.
- Ensure familiarity with health and safety rules and emergency contact numbers (these should already be displayed in the workplace.
- Do not give anyone else security codes, keys or access cards.
- Do not provide access to buildings to unauthorised persons as Security is instructed to remove them if they cannot demonstrate current authorisation.
- Report to University Security any breaches of security or suspicious behaviour.

Some work is too hazardous to be undertaken alone or after hours. This includes any activities involving:

- Hydrofluoric acid.
- Explosive and potentially unstable substances.
- Disposal of hazardous substances.
- Naked flames associated with flammable solvents.
- Low-temperature environments (e.g. cool rooms, freezers).
- High-powered, fast-moving machinery or equipment.
- Heights or confined spaces.
- Significant quantities of molten metals.
- Other hazards or activities as identified by the Manager or Supervisor.

Only competent persons may operate inherently hazardous equipment. A documented risk assessment must be made and/or adequate control measures must be implemented. Work by undergraduate students may only be performed if directly supervised by a staff member or approved nominee.

A minimum of two persons must be present to ensure that appropriate action and support is provided in the event of an incident or injury. The second person must be competent to obtain any assistance required and to make the area safe. If having a minimum of two people present is not possible, there are specific limitations on what types of work may be conducted. Refer to "Working alone" in this manual and also http://www.safety.uwa.edu.au/health-wellbeing/physical/alone.

A breach of any of these conditions may result in after-hours access being cancelled. This information is also available at www.safety.uwa.edu.au/health-wellbeing/physical/after-hours-working.

8 LOCAL RULES

Please refer to the local Health and Safety manuals for each CMCA location referred to in section 8.2 below:

8.1 Local access restrictions

Please refer to the CMCA website for information regarding access to CMCA facilities at the various CMCA sites.

8.2 Specific information regarding local activities

Please refer to the specific manual for working in your area:

CMCA@Physics – Local manual for the CMCA facilities in the Physics building Crawley Campus and the Large Animal Facility (LAF).

CMCA@Bayliss – Local manual for the CMCA facilities in the Bayliss building on the Crawley Campus.

CMCA@Perkins – Local manual for the CMCA facilities at the Harry Perkins Institute of Medical Research at the QEII Medical Centre.

These should be read in conjunction with this document.

9 GAS CYLINDERS

9.1 Movement of gas cylinders

The majority of incidents involving gas cylinders occur while moving them from one location to another. The following control measures must be applied to reduce the potential for an incident:

- The use of purpose-built trolleys or other suitable devices for gas cylinder transportation.
- Closing the gas cylinder's valve, disconnecting and removing associated regulators and distribution equipment.
- Only trained personnel are permitted to move cylinders.
- Use properly designed lifting equipment for the movement of larger gas cylinders.

9.2 Storage of gas cylinders

The guidelines for the storage are detailed for reference in AS 4332 -The Storage and Handling of Gases in Cylinders. The following precautions shall be observed for minor storage and handling of gas cylinders (minor is formally defined – contact UWA Safety, Health and Wellbeing for advice)

- Gas cylinders are to be kept away from artificial sources of heat, i.e. radiators, boilers or steam pipes.
- Gas cylinders shall be provided with adequate ventilation at all times.
- Classes of gas cylinders shall be segregated within the store, but need not be separated.
- Outdoor storage of Class 2 cylinders shall be separated from other dangerous goods by 3 metres. They shall not be less than 1 metre from any door, window, air vent or duct.
- All gas cylinders are to be secured in the upright position by chain or other means to prevent falling.

  Indoor storage of gas cylinders should be avoided wherever possible. However where it is not reasonable to have an outdoor cylinder and reticulation system, the indoor storage / use of gas cylinders shall incorporate a risk management approach.

10 HAZARDOUS CHEMICALS OR SUBSTANCES

Regard all substances as hazardous unless there is definite information to the contrary. It is a mandatory requirement to be in possession of a Material Data Safety Sheet and to complete a risk assessment relating to use of all hazardous chemicals or substances. For further information regarding risk assessments see section - **Risk Management**.

For work with carcinogens, toxins and embryotoxins, cryogenics, herbicides/pesticides, peroxidizables, organic and shock sensitive, cyanides, acid fluoride chemicals and gas cylinders refer to MSDS and the UWA Chemical Safety Procedures.

Clearly label all containers in use within the working area.

Use safety carriers for transporting glass or plastic containers with a capacity of 2 litres or greater.

Do not store flammables (Dangerous Goods class 3) in a domestic refrigerator (cooling and storage of flammables must only be done in a spark proof refrigerator or freezer). Chemical storage refrigerators must never be used to store food or drink.

Segregate and store all Dangerous Goods according to class.

Hazardous substances must be disposed of in accordance with University policy, statutory and MSDS requirements. Areas must provide suitable waste disposal containers and are responsible for their removal by an approved waste disposal contractor (refer to the Chemical Safety Procedures). Use the correct containers provided to dispose of glass, sharps, metal, paper, infectious, OGTR, AQIS waste etc. (Regularly check disposals against licence requirements).

Chemical waste is not to be disposed of via sinks, drains or stormwater channels unless using neutralisation processes approved by the WA Water Corporation.

10.1 Liquid Nitrogen

10.1.1 Introduction

Cryogenic fluids such as liquid nitrogen are widely used throughout the University of Western Australia for various tasks. The nature of cryogenic liquids, the very reason for which they are generally used, causes significant risks to the health and safety of persons who may be exposed to them.

There have been several incidents that have resulted in fatalities due to nitrogen exposures. In these incidents, asphyxiation is usually sudden. The victims inhale air with little or no oxygen content causing immediate collapse into a layer of dense, cold, nitrogen enriched air. Unconsciousness followed rapidly by death is inevitable without immediate rescue and resuscitation. Rescue attempts often result in the rescuers being overcome as well if not conducted carefully.

An example of one such incident in Australia occurred at the Australian Animal Health Laboratory where a staff member entered a sample storage room which had become filled with nitrogen gas that had evaporated from liquid nitrogen used to cool the contents of cabinets. A combination of the ventilation system failing and inadequacies in relation to staff being alerted to, and understanding the seriousness of the failures, led to the tragedy.

This guideline will provide information on methods to minimise the likelihood of injuries and illnesses occurring from the use and storage of liquid nitrogen. This guideline has been developed to meet selected criteria of *AS/NZS 2243.2-1997: Safety in Laboratories – Chemical Aspects*; and *AS1894-1997: The Storage and Handling of non-flammable cryogenic and refrigerated liquids*.

10.1.2 Hazards and Risks

The hazards arising from the use of liquid nitrogen are;

- Asphyxiation in oxygen deficient atmospheres – if vented into a closed space, liquid nitrogen will vaporize, displacing oxygen and possibly cause asphyxia.
- Combustion and explosion hazard from oxygen enrichment of atmosphere – liquid nitrogen can condense air from the atmosphere, which can lead to the production of liquid containing a higher oxygen content than that of normal air. This higher oxygen content increases the combustibility of many materials, creating potentially explosive conditions.
- Cold burns, frostbite and hypothermia – the extremely low temperature of liquid nitrogen (liquid nitrogen boils at -195° C) means that liquid, cold vapour or gas can produce serious skin burns. Objects and uninsulated items of equipment can stick to skin, and flesh may be torn on removal. Cold vapour or gas may cause frostbite given prolonged or severe exposure of unprotected body parts. Transient exposure to very cold gas produces discomfort in breathing and can provoke an attack of asthma in susceptible individuals.
- Over pressurisation from the large volume expansion of the liquid – boiling of liquid nitrogen within a closed system increases pressure (gaseous nitrogen occupies up to 682 times the volume of liquid nitrogen). For example, if liquid nitrogen enters sample vials during storage, the vials when removed from the liquid nitrogen can become rapidly over pressurized with the risk of explosion of the vial.
- Embrittlement – Liquid nitrogen can cause many common materials such as carbon steel, plastics and rubber to become brittle, or even fracture under stress. Liquid nitrogen must not be disposed of down the drain, as piping in laboratory sinks may not be able to withstand cryogenic temperatures.

The expected exposure routes for liquid/gaseous nitrogen are inhalation and skin exposure (ingestion of liquid nitrogen is considered unlikely).

10.1.3 Controlling Risks

If the use of liquid nitrogen is necessary, the risks must be appropriately assessed and controlled to eliminate or reduce the likelihood and severity of injuries and illness to an acceptable level. It is necessary to ensure that liquid nitrogen is appropriately stored, moved and used. It is also important to have an emergency response plan and personnel trained to effectively carry it out safely.

The risk assessment should consider at least the following four situations;

1. Normal evaporative losses.
2. Filling losses – normally assumed to be about 10% of the vessel's capacity.
3. Spillage of the vessel's contents.
4. Spillage of the vessel's contents immediately after filling – loss is equivalent to 110% of the vessel's capacity – 10% filling loss + 100% of contents.

10.1.4 Storage of liquid nitrogen

Liquid nitrogen should only be stored in containers specifically designed to contain cryogenic fluids. Domestic vacuum flasks should not be used. Dewars and pressurized vessels specifically designed for storage of liquid nitrogen, and samples, are the most commonly used containers for the storage of liquid nitrogen throughout the University of Western Australia. A dewar is a double walled flask with an open neck which freely vents to atmosphere and is not at pressure. A pressurized vessel is generally of larger capacity (over 50 litres) and does not freely vent but has relief valves and vents.

All liquid nitrogen containers should be stored:

- in a stable manner and on a sturdy surface; and
- in a position that does not restrict access and egress; and
- in a position where they are unlikely to be knocked by persons or other equipment.

The quantity of liquid nitrogen permitted to be stored in an area depends on the volume and ventilation of the area. Areas with good natural ventilation are preferable for storage and decanting tasks because spills, splashes and evaporation are less likely to cause an oxygen deficient atmosphere. Cryogenic fluids should not be stored or used in an office.

Where liquid nitrogen is used in laboratories with limited or no natural ventilation, only limited quantities can be safely used. It follows that in a larger or better ventilated laboratory, a larger quantity of liquid nitrogen can be used safely. If it is necessary to store and use larger quantities of liquid nitrogen however, a low oxygen sensor may be needed.

A low oxygen sensor will alert persons when there is an oxygen deficient atmosphere in the room. If a low oxygen alarm is activated, the room should be evacuated and security called. The minimum acceptable concentration of oxygen in a room's atmosphere is 18 percent (NOHSC, 1995). However, the goal should be to maintain oxygen concentrations above 19.5%.

The risk of asphyxia must be assessed wherever liquid nitrogen is used or stored, taking into account the volume present in relation to the room volume, the likelihood of leakage or spillage, the normal evaporative losses that occur with liquid nitrogen use and any ventilation arrangements. Some examples of oxygen depletion due to evaporation and spills from common liquid nitrogen dewars are shown below (See appendix A for formula and calculations).

Example 1

Laboratory size (metres)			Dewars			
Width (metres)	Height (metres)	Length (metres)	Size (Litres)	Quantity	Brand	Evaporation Rate (Litres per day per dewar)
6.0	3.0	6.0	30 50	2 1	MVE MVE	0.22 0.49
Total oxygen concentration in laboratory after normal evaporative and filling losses*:			19.5% (borderline – low oxygen alarm should be fitted).			

* Assuming 6 air changes per hour (considered the minimum rate in laboratories – many laboratories will have a higher air flow rate than this)

Example 2

Laboratory size (metres)			Dewars			
Width (metres)	Height (metres)	Length (metres)	Size (Litres)	Quantity	Brand	Evaporation Rate (Litres per day per dewar)
9.0	2.4	6.0	30 50	4 1	MVE Wessington Cryogenics	0.22 1.10
Total oxygen concentration in laboratory after normal evaporative and filling losses*:			19.1% (unacceptable – implement control measures to increase oxygen concentration).			

* Assuming 6 air changes per hour (considered the minimum rate in laboratories – many laboratories will have a higher air flow rate than this)

Example 3

Laboratory size (metres)			Dewars			
Width (metres)	Height (metres)	Length (metres)	Size (Litres)	Quantity	Brand	Evaporation Rate (Litres per day per dewar)
3.0	2.4	5.0	10	2	MVE	0.18
Total oxygen concentration in laboratory after normal evaporative and filling losses*:			20.2% (acceptable)			

* Assuming 6 air changes per hour (considered the minimum rate in laboratories – many laboratories will have a higher air flow rate than this)

If the oxygen concentration in the Laboratory is:

- Greater than 19.5% - it is acceptable.
- Between 18% and 19.5% - it is unacceptable. Implement control measures to increase oxygen concentration (consider controls such as increasing ventilation and decreasing the quantity of liquid nitrogen used in the laboratory). A low oxygen alarm should be installed.
- Less than 18% - it is unacceptable – no person should enter the room without air supplied breathing apparatus (generally only emergency services personnel). If the

room is to be kept at this concentration, a low oxygen alarm should be interlocked to the door to prevent access by unauthorized personnel.

Regardless of oxygen concentration, the University requires that rooms containing more than 50 litres of liquid nitrogen (whether in pressurized vessels or dewars) should have a low oxygen alarm fitted to alert in the event of liquid nitrogen spills, and liquid or gas escapes.

Specific ventilation controls include:

- Vents and relief valves of pressurized liquid nitrogen vessels should discharge to a safe place (not impinge on people, plant or structures) and should be connected to an extraction system that exhausts to a safe external location or recovery system.
- Where processes generate significant quantities of nitrogen gas, extraction ventilation should be used to remove nitrogen gas from areas where it can affect persons and exhaust it to a safe external location or recovery system.

10.1.5 Moving containers of liquid nitrogen:

If containers of liquid nitrogen are to be transported by vehicle, a dry shipper should be used. Under no circumstances should liquid nitrogen be transported in an enclosed vehicle – i.e. there are no persons enclosed in the same cabin in which liquid nitrogen is being transported. A utility may be used as long as the dewar is restrained

For shifting liquid nitrogen containers within and between buildings, a dewar on wheels or suitable trolley should be used. Goods lifts should be used where available to move containers between floors. If a goods lift is not available, arrangements should be made so that no persons accompany vented dewars in a passenger lift - lock out mechanisms or out of hours shifting of liquid nitrogen may be appropriate under these circumstances.

10.1.6 Filling operations:

Only trained personnel should perform liquid nitrogen filling and transferring tasks. Controls should be implemented to minimize both the quantity and likelihood of spills and splashes, as well as exposure to escaping liquid and gases. Controls could include using liquid nitrogen pumps, wearing normal personal protective equipment and ventilation. Valves must be opened slowly to allow for thermal effects on fittings and gas escape due to evaporation.

10.1.7 Use of liquid nitrogen:

Effective control options must be implemented to ensure the use of liquid nitrogen is safe. Control options in the engineering category are preferable as they reduce the risk at its origin. Administrative controls and the use of personal protective equipment only reduce the risk for the person and rely on their correct implementation and use.

It is particularly important to note that personal protective equipment such as gloves and footwear can increase the severity of injuries since larger spills can become trapped, thus causing more severe cold burns. In other instances however, personal protective equipment is effective in preventing cold burns. The fundamental principle for selection of personal protective equipment is that it should prevent significant quantities of liquid nitrogen from touching the skin and eyes. Personal protective equipment should not allow fluids to collect on or within them or if it does, the item must be easy to remove quickly.

It is therefore necessary to carefully consider the tasks performed using liquid nitrogen, possible mechanisms of injuries and illnesses, the quantities persons might be exposed to, then select and implement the most appropriate control measures.

- Engineering controls

- Enclosed systems;
- Natural or forced ventilation;
- Use a liquid nitrogen pump to decant the substance rather than pouring;
- Use of equipment designed for use with cryogenic fluids;
- Inspection and maintenance program to ensure dewars, cylinders and equipment are in good condition.
- Low oxygen alarms;
- Interlocking doors;
- Emergency equipment such as safety shower and eye wash unit;

• Administrative controls
  - Training of persons using liquid nitrogen;
  - Safe working procedures;
  - Supervision and not working alone;
  - Limited access to hazardous areas;
  - Emergency response procedure;
  - Good housekeeping;
  - Good personal hygiene;

• Selection and use of personal protective equipment
  - Full face shield;
  - Clean and dry cryogenic gloves for handling cold items or thick leather gloves to protect against splashes and for handling cold items (gloves should be loose fitting and easy to slip off in the event of a spill which enters the glove);
  - Closed in footwear that can be removed easily in the event of a spill;
  - Long pants should be worn (on the outside of footwear).
  - Air supplied breathing apparatus will be needed for work in an oxygen deficient atmosphere (i.e. less than 18%). The University of Western Australia recommends that persons do not enter rooms in which the oxygen concentration is less than 19.5%.

10.1.8 Emergency response:

If a significant quantity of liquid nitrogen has escaped, or been spilt, the area affected will not contain adequate oxygen to support life. The area should be immediately evacuated. Security and the Workplace Health and Safety Officer for the area should be contacted.

If a person is showing symptoms of mild or severe asphyxia, they should be moved to an area with fresh air. If they are not conscious, security should be called immediately and resuscitation started by a qualified first aid officer or physician.

Cold burns from liquid nitrogen should be immediately and continually flushed with tepid or unheated tap water.

Professional medical advice should always be sought urgently for significant cold burns and asphyxia. Persons affected may need urgent medical treatment at a hospital.

11 LASERS

Under the Radiation Safety Act 1975 all Class 3B and Class 4 lasers must be registered with the Radiological Council and users must be licensed or supervised. The Act also restricts the use of laser pointers.

Working rules are essential for all Class 3B and Class 4 lasers to ensure they are used with a high standard of safety.

11.1 Protocols

All new procedures involving class 3B or 4 laser equipment at UWA require the user to have completed a protocol application before starting work. Protocol forms are available from UWA Safety and Health or from the school radiation safety officer (SRSO).

The forms must be completed, signed by the applicant and signed by their supervisor before being sent to UWA Safety and Health for a final assessment. The application will be reviewed and if approved it is signed and issued with a protocol number. Copies of the approved protocol are sent to the applicant and the SRSO.

Any changes to an agreed protocol must be approved by UWA Safety and Health. Such changes may include the use of new equipment.

11.1.1 Legislative requirements for lasers

11.1.1.1 Registration

- UWA Safety and Health maintains the registration for the University with the Radiological Council.

11.1.1.2 Safety officers

- Each department using registered class 3B and 4 lasers has a Laser Safety Officer (LSO) or a School Radiation Safety Officer (SRSO). The LSO is responsible for the safe operation of lasers under their control. The Laser Safety Officer for the University is the Manager, Safety and Health.

Australian Standard AS 2211 details the main procedures and check lists. The working rules common to all Class 3B and Class 4 lasers, listed below, should be combined with specific rules for each laser.

11.1.1.3 Working rules

1. Do not look into the laser beam. (For any class of laser this is a hazardous practice.)
2. The laser must be used within a controlled area from which the laser beam cannot escape. Ensure that the controlled area is clearly defined with signs, and all windows and other outlets are blocked.
3. Within the controlled area and with the laser:
    - There should be a shutter at the laser aperture.

- Use the correct signs, according to AS2211, on laser, at laser aperture and in the area.
- Ensure the power supply is keyed, with the key stored safely while the laser is not in use.
- Mount laser components well below eye level and secure on the table
- Use beam stops to terminate the beam and prevent its uncontrolled transmission.
- Enclose beam paths with interlocked covers so that the laser beam cannot escape from the controlled area.
- Remove specular reflecting surfaces.
- Use low power or neutral density filters during alignment or other set up procedures.
- Wear the appropriate goggles when the laser is energised.
- Illuminated light at entrance and on laser – indicating clearly when the beam is on.
- Avoid hazardous electrical situations.
- Door interlocks may be required to terminate the laser beam when the door is opened.

4. Immediate measures must be taken to remove potentially hazardous situations arising from laser beams that may be emitted due to equipment defect, misalignment or any other reason.
5. Additional working rules, specific for each laser must, where necessary, be documented to ensure the safe operation of the unit.
6. Class 3B and 4 laser equipment must not be operated by inexperienced persons unless under the immediate personal supervision of an experienced licensed operator.
7. Visual alignments or adjustments must not be carried out whilst the laser on full power, unless suitable goggles are used which prevent exposure to the eyes.
8. Users of Class 3B or Class 4 lasers must hold a laser licence or be under the supervision of a licence holder.
9. Accidents and incidents must be reported to the UWA Safety and Health.
10. You should be familiar with the contact details of your school laser safety officer.

12 RISK MANAGEMENT

For assistance in the decision making process (including 'when' and 'if' risk assessment is required), use the flowchart 'Task and Activity Planning in a Safe system of Work'. Refer to Safety Management at: www.safety.uwa.edu.au/safety_management

To ensure that activities are unlikely to cause harm it is necessary to be aware of what could possibly go wrong and what the consequences could be. You must then do whatever is 'reasonably practicable' to ensure that people are not harmed. This process is known as risk management and involves the four basic steps:

- Identify hazards – find out what could cause harm.
- Assess risks – understand the likelihood of a hazard causing harm and how serious it could be.
- Control risks – implement the most effective control measure that is reasonably practicable in the circumstances.
- Review control measures to ensure they are working as planned.

In the UWA Safe System of Work, risks are categorised as concentric shells. Each shell addresses a specific aspect of the task or activity as follows:

ENVIRONMENT / SUBJECT: This is the outer of three shells of risk.
An overall assessment is made and kept up-to-date as a valuable reference source by Safety & Health. It is known as the "UWA Safety & Health Risk Register".

RESOURCES: This is the middle shell of risk.
Assessment of the use of resources can be prepared in advance of work activities. Hazardous plant and equipment can be assessed for use by creation of Standard Operating Procedures and assurance of worker competence through training and creation of supporting records. Hazards associated with chemicals and substances can be assessed through use of Material Safety Data Sheets and Chemical Risk Assessments.

PROCESSES: This is the inner shell of risk.
This is the part of a task which involves the work itself and the aspects which cannot be accounted for in advance. It only addresses previously unassessed hazards IF they are judged to be present in which case it is necessary to carry out Job Safety Analysis which involves writing a Method Statement and completing a Risk Assessment.

12.1 Application of the UWA Safety and Health Risk Register

The UWA Safety and Health Risk Register lists all the relevant acts, regulations, standards, guidance notes and UWA procedures for reference. It considers hazards and risk in all the main areas and subject categories found at the University. Refer to www.safety.uwa.edu.au/safety_management page and open 'UWA Safety and Health Risk Register'.

This document divides the main activities conducted at UWA or on behalf of UWA into categories. Each category lists the legislation which applies and the University's response in the form of UWA Safety, Health and Wellbeing procedures and guidance. The existence and application of these documents collectively comprises our control measures for the minimisation of risk in each category. The perceived hazards are assessed as a RAW risk and then re-evaluated as RESIDUAL risk after accounting for the impact of the control measures when properly implemented. The risk rating process was carried out in accordance with the UWA Safety Risk Management Procedure.

The workplace is required to select the parts of this document which are applicable to its activities and create a Workplace Risk Register. Any additions which are not included in the central UWA Safety and Health Risk Register are to be forwarded to UWA Safety, Health and Wellbeing for inclusion. Notice of revisions will be communicated to ensure that the University remains informed and up-to-date.

12.2 Assessing hazards associated with resources

Resources consist essentially of competent personnel, risk assessed use of plant/equipment and risk assessed interaction with chemicals/substances.

Records of worker competency
These must exist for individuals who operate potentially hazardous equipment to show that they are proven, via one or more of training, experience and qualifications, to be able to work safely in the environment and with the resources.

Standard Operating Procedures (SOP) for hazardous equipment
These are to be prepared for potentially hazardous equipment. This can save a lot of time in future as they are then available upon demand. In addition to their design acting as a risk assessment they also provide the option of using them as records of competency. It could be difficult to prove that personnel are competent and/or that they are qualified and trained without written records. Even if

there are separate training records, preparing SOPs and having them on display in the workplace provides a useful reminder. Having prepared SOPs saves a great deal of time later, as the need to assess hazardous equipment via full risk assessments, for individual jobs, may be avoided. Work areas should develop a local library of SOPs. It may seem like a hurdle initially but it saves time and work later. Having SOPs for potentially hazardous equipment helps you in four ways:

- Signed and endorsed SOPs can be stored as documented proof of training and competency.
- They are to be displayed near equipment as a handy reminder for reference.
- They can be attached to a Safety Assessment form if one is needed for a task.
- WorkSafe inspectors ask for proof that equipment and tasks have been risk assessed and that personnel working in the area are competent.

Assessment of hazardous chemicals or substances
It is a mandatory requirement to be in possession of a Material Data Safety Sheet and to complete a risk assessment relating to use of all hazardous chemicals or substances.

For work with carcinogens, toxins and embryotoxins, cryogenics, herbicides/pesticides, peroxidizables, organic and shock sensitive, cyanides, acid fluoride chemicals and gas cylinders refer to the MSDS and the UWA Chemical Safety Procedures.

12.3 Carrying out Job Safety Analysis (JSA)

Activities which call for Job Safety Analysis (i.e. Safety Risk Assessment + Method Statement) can be defined as those where you or others may be exposed to otherwise unassessed hazards. If you plan to work outside of your normal workplace or you intend to use potentially hazardous equipment, not covered by existing SOPs and training, then a JSA is required to risk assess and describe how the work is to be completed safely.

Risk assessments determine the level of hazard or risk associated with any procedure and assess whether current control methods are adequate or need to be improved. They must be performed when:

- It is the first time that a procedure is to be performed.
- There is only limited knowledge about a hazard or the risk or how the risk may result in injury or illness.
- There is uncertainty about whether all of the things that can go wrong have been found.
- The situation involves a number of different hazards that are part of the same work process or piece of plant and there is a lack of understanding about how hazards may impact on each other to produce new or greater risks.
- There is to be a significant change of procedure/practice since original assessment.

In research and educational environments documented risk assessments must be completed for the following:

Tasks may be part of larger activities or there may be potential hazards in the area of work which are outside of your control. In such cases it is reasonable to expect that the person responsible for the area has identified the need to risk assess. In addition to potential hazards to you whilst working in

their area, your task may impact on routine activities in ways which you are unable to account for. Before commencing tasks it is important that you communicate with the person responsible for the local area to enable proper control to be maintained.

In the “supplier / customer” relationship, it is the customer who carries responsibility for ensuring safe working in their area and for carrying out Job Safety Analysis although interaction with the “supplier” should occur to ensure proper understanding of all the implications of carrying out the task or activity. For example, consider the case of workshop personnel carrying out work in an area away from the workshop. Whilst the workshop supervisor was responsible for “supplying” workers who were competent to do the work, the supervisor for the area in which the activity is to occur is responsible for what happens in their area of control. As the “customer” they must consult with workshop personnel beforehand to determine if all the potential hazards have been accounted for and if necessary carry out further Job Safety Analysis.

Job Safety Analysis is used to account for otherwise unassessed hazards. It has two main components:

- Risk Assessment - assesses potential hazards and works out how to minimise risks.
- Method Statement - states what you plan to do and accounts for the risk control measures identified in the risk assessment. This is a useful document for describing tasks either as a one-off or regularly repeated tasks.

12.4 Cases when Job Safety Analysis is not necessary

It is not always necessary to carry out detailed Job Safety Analysis for every task. It would be impractical and unrealistic to expect. However, it is important to be able to demonstrate that tasks and activities are appropriately considered. Many hazards and their associated risks are well known and have well established and accepted control measures. In these situations formal risk assessment is unnecessary. If, after identifying a hazard, you already know the risk and how to control it effectively, you can just implement the controls.

Job Safety Analysis is **not** necessary in the following situations:

- Legislation requires some hazards or risks to be controlled in a specific way – these requirements must be complied with; or
- A code of practice or other guidance sets out a way of controlling a hazard or risk that is applicable to your situation and you choose to use the recommended controls. In these instances, the guidance can simply be followed; or
- There are effective controls that are in widespread use in the particular industry, that are suited to the circumstances in your workplace. These controls can simply be implemented.

Many workplaces may proceed safely with day to day operations without further **Job Safety Analysis** if all of the following are true:

- **UWA Safety and Health Risk Register** addresses the work environment or subject; and
- **Standard Operating Procedures** are available for all hazardous equipment used; and
- **Records of competency** exist for individuals who operate potentially hazardous equipment.
- **Permission** to proceed has been given by the Supervisor of the area.

It may be appropriate to make a formal statement that after accounting for these (highlighted) contributing assessment processes there are no further identifiable, unassessed risks remaining. In workplaces where this is true for routine operations (e.g. some workshops), it should only become necessary to carry out a Job Safety Analysis if the nature of the work is such as to introduce new factors which are not addressed as described above.

13 RELATED DOCUMENTS

Flowchart – Task and Activity Planning in a Safe System of Work

Safety Risk Assessment form

Standard Operating Procedure

Method Statement

For all of above, refer to http://www.safety.uwa.edu.au/management/toolkit

Material Safety Data Sheets
Refer to http://www.safety.uwa.edu.au/topics/chemical/chemalert