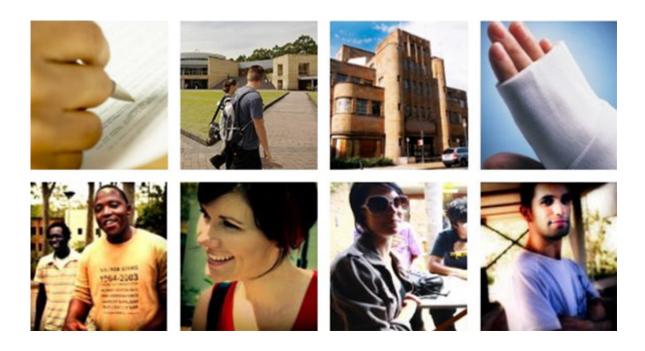
HEALTH & SAFETY RISK ASSESSMENTS



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INTRODUCTION

Welcome to the University of Newcastle's Risk Assessment training course. This course has been developed to help you understand:

- What risk assessment is;
- Why we do risk assessments;
- How to do a risk assessment.

It is important to remember that risk assessments are an easy way to ensure that you have contributed to the prevention of risk to yourself or others.

Risk assessments are not difficult and can help to create a better work environment for everyone.

WHAT IS A RISK ASSESSMENT?

A risk assessment is the formal tool for systematically identifying:

- What can physically or psychologically injure or damage a person (harm);
- The level of possible harm;
- What is currently being done to avoid the harm (the Control);
- Whether that control will be effective to avoid the harm;
- Whether or not additional controls need to be put in place to better avoid the harm.

A Health and Safety Risk Assessment is a process where you identify, assess and control hazards that may affect people at the place of work. The larger and more intense the project, the task, or the space being assessed, the greater the effort needed to complete the Risk Assessment.

Effective Risk Assessment in turn helps us to successfully undertake Risk Management.

WHAT IS RISK MANAGEMENT?

The four main steps of Risk Management:

- Identify hazards
- Assess the risks of the hazard
- Select appropriate risk controls, or decide not to continue with an activity
- Periodically review the process and the risk controls to ensure they are working and preventing harm.

The risk management process is used for assessing the risk of many organizational activities not just health and safety e.g. finance and credit, third party accidents and insurances, disasters and security risks.

This Risk Management process uses Health and Safety Risk Assessments to identify practical steps to protect all people from real harm and injury.

WHY DO IT?

It is not always possible to remove all the hazards in a workplace for example:

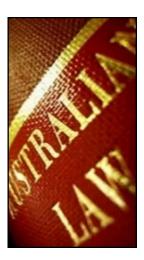
- Stairs
- Uneven paths outdoors
- Handling chemicals as part of the job
- Using tools and machinery
- Lifting objects

However, these hazards do not necessarily cause harm if there are appropriate controls in place to prevent the harm. Risk assessment helps with selecting the controls and prioritizing action for implementation.

WHY DO IT (CONTINUED)?

There are three main reasons for undertaking risk assessments:

- Ethical: Any employer is obliged to send its staff home in the same condition they came to work.
- Financial: Injury and illness costs (monetary and through loss of skills and knowledge) can be a large financial burden on both the organisation and the individual:
- Legal: Employers are legally bound by a "duty of care". The WorkCover Authority of New South Wales administers Health and Safety laws and an inspector may ask to be shown a risk assessment while investigating any safety incidents or near misses.



WHY DO IT (CONTINUED)?

The Work Health and Safety Legislation requires that all hazards must be eliminated unless it is not reasonable to do so. In cases where hazards cannot be eliminated, they must be managed according to a set formula called the "Hierarchy of Controls".

There are substantial fines for both organisations and individuals for non-compliance with legislative requirements.

The University manages its responsibilities in regards to Health and Safety through a number of procedures. Risk Assessment is a fundamental part of these procedures as it helps to identify and quantify possible health risks. Risk assessment also helps to prioritise action to reduce the possibility of injuries to staff, students and visitors.

WHO IS INVOLVED?

All members of an organisation have roles and responsibilities in keeping the workplace safe which includes being involved in risk management.

Supervisors and managers are responsible for ensuring the workplace and the activities undertaken by staff and others within their area of supervision, are done safely and without risk to health.

Staff, students and visitors have a responsibility to:

- Follow the procedures developed by the organisation;
- Provide input into developing safe procedures;
- Reporting hazards and incidents;
- Being involved in risk assessments when required; and
- Suggesting any improvements that could reduce the risk of illness or injury.

WHO SHOULD BE INVOLVED (CONTINUED)?

Supervisors and managers are legally responsible for their area of control. This includes:

- Academic Supervisors
- Chief investigators
- Laboratory Managers
- Teaching staff
- Professional staff who have control over activities and team members

Other people will get involved in the risk management process and will undertake risk assessments when required e.g.:

- Technical Officers
- Professional staff members
- Students
- Health and Safety Committee members

All these people need to have an understanding of risk management and how to conduct a risk assessment of the tasks within their work area. It is not sufficient for a risk assessment to have been completed by someone else if it is done on your behalf or for your area without your input.

WHEN SHOULD A RISK ASSESSMENT BE DONE?

The legislation requires the employer to assess the risks to staff and to others who are at their place of work (The University), and to provide information, instruction and supervision.

SafeWork NSW guidelines list a range of circumstances where risk assessments are required including:

- Before setting up and using a workplace;
- When planning work processes;
- Before installing, commissioning or erecting plant or equipment;
- Whenever changes are made to the:
 - o Workplace;
 - System or method of work;
 - o Plant or equipment used;
 - o Materials used;
- Whenever new information regarding work processes becomes available.

If you require more information, please scroll over the tip button at the bottom of the screen and see the Health and Safety website.

TIP:

There are some useful tools that make the task easy. The answers to "Frequently Asked Questions" about Risk Management can save you "reinventing the wheel". A directory of information and contacts within this University and web links to other sites provide much useful information and assistance.

UNDERSTANDING HEALTH AND SAFETY RISK MANAGEMENT

As we saw in slide 2, there are 4 basic steps to Risk Management which is a process designed to look at all the risks in the workplace and manage those risks. The University must provide quality instruction and training so that all those responsible understand and can recognize the hazards in the workplace, can conduct a risk assessment and have knowledge of the risk controls that can be applied. Supervisors and Managers have a duty to ensure that the staff and students that they supervise have the skills and knowledge to perform the task without risk. This may require training which could involve demonstrations, theoretical assessment of a risk with close observation, and close supervision until individuals are deemed competent. We know we can't eliminate all the risks on a workplace so we must teach people to manage them to prevent hurt and harm.



NOTE:

If, for example, a course of study requires a student to learn a technique using a hazardous tool, or chemical, or piece of equipment, there is always a possibility they will be injured. Ideally, in order to eliminate the risk, the student would simply not be permitted to use the tool or equipment. This is obviously not a practical solution in a teaching and learning setting, and therefore requires a Risk Management approach.

RISK MANAGEMENT STEP 1 – HAZARD IDENTIFICATION

WHAT IS A HAZARD?

Hazard means anything that has the potential to harm the health or safety of a person or plant.

Generally hazards can be classified into five groups:

- Physical; (see Note 1)
- Chemical; (see Note 2)
- Biological; (see Note 3)
- Mechanical; (see Note 4)
- Psychological. (see Note 5)

Unless hazards are identified the rest of the Risk Management process cannot begin.

NOTE 1 PHYSICAL:

Physical Hazard Cause can include:

- Heat;
- Lighting;
- Noise:
- Vibration;
- Ionising radiation;
- Dust;
- Pressure;
- Electricity.

NOTE 2 CHEMICAL

Chemical Hazard Cause can include:

- Acids, alkalis;
- Metals:
- Non-metals;
- Gases;
- Organic compounds;
- Dusts;
- Vapours.

NOTE 3 MECHANICAL Mechanical Hazard Cause can include:

• Manual handling – over exertion,

- lifting or pulling;
- Unguarded machines;
- Hydraulic pressure;
- Gravitational energy falls of people or objects.

NOTE 4 BIOLOIGICAL

Biological Hazard Cause can include:

- Animal-borne;
- Human-borne;
- Vegetable-borne.

Potential Disease or Injury can include:

- Heatstroke, cramp, fatigue;
- Headaches, eyestrain;
- Hearing loss;
- White finger disease;
- Lung cancer;
- Silicosis:
- Decompression sickness (bends);
- Heart failure, burns.

Potential Disease or Injury can include:

- Dermatitis, eye injury;
- Cadmium/lead/mercury poisoning;
- Arsenic/cyanide poisoning;
- Carbon monoxide poisoning;
- Cancer, nerve damage;
- Lead poisoning;
- Mercury poisoning.

Potential Disease or Injury can include:

- Musculoskeletal injury spinal injury, muscle strains, sprains;
- Acute physical injuries severed/crushed limbs;
- Acute injury crushed limbs;
- Acute injury broken bones, brain damage.

Potential Disease or Injury can include:

- Anthrax, Q fever;
- AIDS:
- Aspergillosis (farmers lung).

NOTE 5 PSYCHOLOGICAL

Psychological Hazard Cause can include:

- Violence, harassment or abuse;
- Stress.

Potential Disease or Injury can include:

- Physical harm, stress; Psychosomatic disorders (eg physical symptoms of illness that may be brought about by stress).

HAZARD SOURCES



Hazards can arise from:

- Workplace premises; (see Example 1)
- Work practices and systems; (see Example 2)
- Plant and equipment; (see Example 3)
- Workplace environment. (see Example 4)

EXAMPLE 1

Work premises

Hazards can arise from the workplace design including:

- Work premises layout;
- Condition of the work premises;
- Workstation design;
- Lighting within the work premises;
- Emergency situations such as earthquakes.

EXAMPLE 2

Work practices and systems

Hazards can arise from work practices and systems including:

- Shiftwork arrangements;
- Hazardous processes;
- Psychological hazards;
- Fatigue related hazards.

EXAMPLE 3

Plant

Hazards can arise from plant including:

- Transport;
- Installation, erection, commissioning and use;
- Repair;
- Maintenance;
- Dismantling, storage and disposal.

EXAMPLE 4

Physical working environment

Hazards can arise from the physical working environment including:

- Electrocution;
- Hazardous substances;
- Fire:
- Explosion;
- Slips, trips and falls;
- Exposure to heat;
- Biological organisms;
- Harassment.

IDENTIFYING THE HAZARD

There are a number of methods that are used across the University for identifying hazards;

- Observation everyone keeping their eyes open for something that can cause harm and reporting it;
- Health and safety inspection conducted regularly in all work locations;
- Investigating incidents and injuries to see whether they have been caused by a previously unrecognized hazard, or the risk of the hazard not being properly controlled:
- Audits done by a person external to the work location sometimes a fresh pair of eyes will see a hazard that has not been recognized before.

IDENTIFYING THE HAZARD (CONTINUED)

When looking for hazards, for example when conducting a health and safety inspection or when walking through the University campus, think about all the potential hazards that were referred to in the previous slides and consider:

- The different steps of a task and what that involves;
- The systems of work comprising of: people, plant and equipment, work methods and procedures, materials, and the work environment;
- Suitability of tools, equipment, materials and systems for the task;
- How the tools, equipment and materials are used;
- The experience of the persons, both those performing the task, or those in the vicinity, while the task is performed;
- Potential damages to persons if something goes wrong with any tools, equipment, materials or work systems;
- How staff and other people may be affected by any hazards;
- How staff and other people may be hurt by chemicals or other damaging energies.

ASSESSING THE RISK

Once hazards have been identified we need to assess the risk of the hazard. Risk is defined as the likelihood that a hazard will cause harm and the consequence, or severity, of the harm.

Risk assessment is the process for assessing the risk and the University's Health and Safety Risk Matrix is the tool for doing this. Risk assessment is a pro-active way of preventing an accident or incident occurring or reoccurring.

	Risk Matrix	Likelihood				
	N.B. For more details regarding use of this matrix / definitions refer to final page of this document	Rare	Unlikely	Possible	Likely	Almost Certain
ce	Severe Eg. Potential Fatality or Injury or Illness with permanent disability	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
dneuce	Major Eg. Potential Lost Time Injury (but non-permanent disability)	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Consed	Moderate Eg. Potential Medical Treatment injury or illness (but no lost time)	LOW	LOW	MEDIUM	MEDIUM	HIGH
ပိ	Minor Eg. Potential First Aid injury	LOW	LOW	LOW	MEDIUM	MEDIUM
	Minimal Eg. Hazard or near miss requiring reporting and follow up action	LOW	LOW	LOW	LOW	LOW

HOW TO USE THE RISK ASSESSMENT MATRIX

<u>Click here</u> for an example of <u>Risk Assessment Matrix</u>. Use this as a template as we explain how to interpret the matrix.

To properly use a Risk Assessment Matrix follow these four steps:

- Step 1 First consider the Likelihood of the hazard causing harm working from left to right, determine if this will be rare or anything else through to almost certain.
- Step 2 Next consider the Consequence of the harm by working from bottom to top, to determine how severe the harm (injury/illness) posed by the hazard would be from minimal to something that could cause death or permanent disability.
- Step 3 Follow the rows and columns to their meeting point to identify the level of risk.
- Step 4 Use the outcome (risk) to determine the risk controls and therefore the subsequent corrective and preventive actions.

Depending on the outcome of the risk, action is determined according to the severity and depending on the level of risk, the matrix helps to determine the priority for action. For example, the hazards that have the potential to cause the greatest harm are addressed first.

RISK FACTORS TO CONSIDER

More than one person should always be involved in a risk assessment as it is not always easy to come to the right conclusion when thinking about the likelihood and consequence. Input from others will help to bring a mixture of ideas and experiences to the process which will result in a more accurate assessment. The people affected by the risk assessment should always be consulted during the process.

It can be helpful to consider a number of factors when assessing the risk of a hazard. For example:

- The potential number of people that can be harmed
- The duration the risk can remain e.g. how long does it take to do the task that involves the hazard
- The same hazard can often cause a different level of injury/illness to different people (e.g. a person prone to allergies is more likely to develop an allergy to animal dander if they are required to handle animals).
- The risk of injury/illness can be different for similar substances e.g. solvent based paints are far more likely to cause illness than water based paints.
- Not all hazards take the same time to cause injury/illness; the time duration and event frequency of hazards is often a determining factor when assessing risk potential (e.g. a carcinogen may take up to 30 years to show symptoms).
- People often have different perceptions of potential hazards and the damage the hazards can cause e.g. sitting at a desk working on a computer may not be seen as a hazard by a person operating a piece of machinery, but there a risk with this activity as well if not well managed.

RISK CONTROL

Once the risk assessment has been completed the next step is to identify and select the appropriate risk controls.

Controls need to be developed using the Hierarchy of Controls (see NOTE and diagram), which works through a number of options from the most to the least desirable.

- Elimination can the hazard be eliminated altogether e.g. by eliminating the need to do the job?
- Substitution if elimination is not possible can something less harmful be used instead e.g. using fiberglass as an insulating material instead of asbestos?
- Engineering can the hazard be isolated from the person e.g. through machine guarding dust/fume extraction, sound dampening devices or the person being isolated from the hazard e.g. by installing handrails or other barriers or changes to materials and equipment?
- Administration where the other preferable controls are not possible or not sufficient on their own are there other controls available such as training, written procedures, permits to work for high risk activities, job rotation, job sharing, changes to work methods considered?
- Personal Protective Equipment (PPE) the least preferred option because it is totally dependent on the individual to use, wear it and maintain it correctly. The problem is the hazard is still there so exposure to the hazard will occur if the PPE is not used correctly

NOTE:

The Hierarchy of Controls is a list which helps to control and eliminate hazards through a series of steps. In many cases complex hazards will require a combination of the steps to adequately guard individuals from risk.

RESIDUAL RISK

When considering appropriate risk controls, you will find many hazards and risks have already been controlled through applying different levels from the hierarchy of controls e.g. guarding machinery in a workshop, spill containments and use of fume hoods in a laboratory, Standard Operating Procedures available, training records and PPE available and in use.

However, your risk assessment may indicate the control doesn't fully eliminate the potential of the hazard to cause harm, there is a need to assess this remaining risk which is referred to as the residual risk.

The level of residual risk will enable a decision to be made to either:

• Accept the risk;

- To stop the activity or project; or
- To continue to search for better controls.

For activities that are to be implemented or to continue, we also formulate a 'corrective action plan' to better control hazards.

CORRECTIVE ACTIONS

The corrective action plan lists the suggested controls, when the controls need to be in place by, and who is responsible for their implementation.

The priorities for action depend on the level of risk and the following can be used as a guide:

- Extreme Additional controls are essential. They are to be implemented before the activity commences when possible but if this is not possible they should be implemented within one month;
- High Additional controls are required. They are to be implemented before the activity commences but if this is not possible they should be implemented within 3 6 months;
- Medium Additional controls may need to be considered with scheduling within 6-12 months
- Low additional controls are unlikely to be required

The goal is to reduce the risk to a lower level with LOW being the aim where possible to minimise the risk of the hazard to persons that may be affected.



RISK REVIEW

The fourth step in the Risk Management process is risk review.

Things can change in a workplace e.g. plant and equipment, substances and materials and processes, organizational changes and changes to legislation, and the changes can impact the effectiveness of existing risk controls.

Ongoing monitoring and review ensures that the controls have been effective, and still are effective in controlling the risk of the hazard, and has the following benefits:

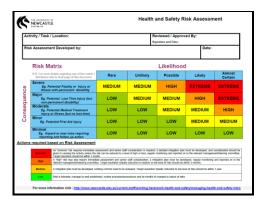
- Measures the effectiveness of the risk controls;
- Identifies any new hazards that may have been subsequently introduced into the system of work;
- Validates any new controls that may have been successfully introduced into the system of work;
- Documented monitoring and review systems provide formal evidence of health and safety compliance;
- Contributes to a safer place of work;
- Involves those in the workplace in ongoing continual improvement.

DOCUMENTATION

Information we gather on hazards, risk assessments, risk controls and risk reviews must be recorded by documenting the process. This has many benefits:

- To provide evidence the University is managing health and safety risks and therefore complying with legislation.
- If something goes wrong, the Risk Assessment documentation is a useful tool to investigate the cause and identify what can be improved.
- It can be helpful when training or inducting new staff or students to the activity or the work area.
- The documentation can assist the process of review, improvements can be added, and the workload of the review is simplified and streamlined.

The University Risk Management Form is the tool used to document the risk management process. The following slides describe its use.



NOTE:

Inevitably, the purpose of documentation is to demonstrate that you are working towards elimination/control of hazards in a systematic manner, to provide a trail to assist in the process of improvement and to also demonstrate compliance with health and safety legislation.

USING THE UON RISK MANAGEMENT FORM

It is recommended that when a risk assessment task is undertaken a small team is formed to provide a balanced view of the situation and to use the different knowledge and experiences that people can bring to the activity. Differing thoughts on risk ratings for a particular hazard can lead to a better quality assessment as the outcome.

It may be appropriate to request assistance from the Health and Safety Team or another workgroup if the participants and not very familiar with the process.

The following slides will walk you through using the form.

	Risk Matrix	Likelihood				
	N.B. For more details regarding use of this matrix / definitions refer to final page of this document	Rare	Unlikely	Possible	Likely	Almost Certain
ce	Severe Eg. Potential Fatality or Injury or Illness with permanent disability	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
dneuc	Major Eg. Potential Lost Time Injury (but non-permanent disability)	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Consed	Moderate Eg. Potential Medical Treatment injury or illness (but no lost time)	LOW	LOW	MEDIUM	MEDIUM	HIGH
ပိ	Minor Eg. Potential First Aid injury	LOW	LOW	LOW	MEDIUM	MEDIUM
	Minimal Eg. Hazard or near miss requiring reporting and follow up action	LOW	LOW	LOW	LOW	LOW

USING THE UON RISK MANAGEMENT FORM (CONTINUED)

The first step is to decide on the reason for the risk assessment. It could be to:

1. Assess the risks of an Activity

This assesses each step of the activity. Decide on what it is that needs to be done and list the procedures by steps. Each step needs the hazards to be identified, the risks to be assessed and the controls to be determined.

2. Assess the risks of a work area

This is a review of the area where activities are undertaken. This usually starts at a point in the room and systematically branches out, listing all the equipment, tools and furnishings. Each of these items then have their risks assessed. This can include the equipment, the use and the location relative to other pieces of furniture, and activities that may be undertaken in the space.

USING THE UON RISK MANAGEMENT FORM (CONTINUED)

STEPS 1-3

<u>Step 1</u> – Complete the title of the Risk Assessment, name of the persons completing the assessment and the date.

<u>Step 2</u> - For a task risk assessment, list the activities in steps down the first column of the form. For a space risk assessment, list the equipment or materials within the space. If a procedure is complex, break the assessment into parts and undertake a risk assessment on each part.

<u>Step 3</u> - In column 2, list the hazards that are present in each step of the process or pieces of equipment (see Step 3).

STEP 1:

Activity / Task / Location:		
	Approved By:	
	Date	Signature and
Developed by:		Date:

STEP 2



STEP 3



USING THE UON RISK MANAGEMENT FORM (CONTINUED)

STEPS 4 TO 6

<u>Step 4</u> – In column 3, use the risk matrix to calculate the risk level of the hazard assuming the risk controls have not been implemented.

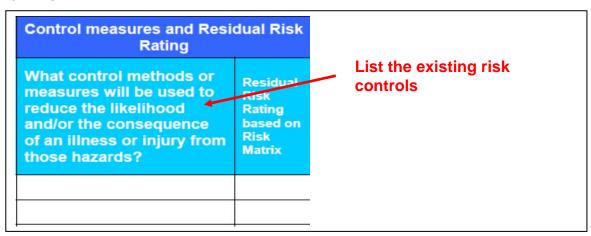
<u>Step 5</u> – In column 4 list the existing risk controls that are in place to eliminate of minimize the hazard

Step 6 - In column 5, use the risk matrix again to calculate the residual risk of the hazard with the risk controls in place

STEP 4

Hazard Identificatio			
What are the steps of the activity / items of equipment?	What are the potential hazards?	Risk Rating base or Risk Matrix	Calculate the risk level of the hazard
			-

STEP 5



STEP 6



USING THE UON RISK MANAGEMENT FORM (CONTINUED)

Step 7 – in column 6 list the remaining (residual) hazards if they exist (see image).

Step 8 – In column 7, list the additional risk controls that are required to further reduce the risk of the hazard.

STEP 7

Remaining Hazards	Actions required	
What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?	List the remaining (residual) hazards

STEP 8

Remaining Hazards	Actions required	
What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?	List the additional risk controls that are required to reduce the risk of the residual hazards

Step 9 - From the controls listed, complete the summary of risk controls in the section on page 2 This gives an overview of tools, equipment and procedures to be implemented to safely undertake the activity.

STEP 9

Summary of Requirement	Review Period / Date	
Personal Protective Equipment		
Other Equipment and Equipment Protection		
Training Requirements		
Procedures, SOPs etc		
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice	

CONSULTATION AND REVIEW

Discuss the outcome of the risk assessment with relevant people such as supervisors, staff and students who may be exposed to the hazards with the goal of achieving the lowest possible risk of harm.

The Faculty or Division Health and Safety Committee is also a good forum for reviewing and discussing Risk Assessments.

The Manager or Supervisor who has responsibility for the area will be the person who will authorize the actions arising from the Risk Assessment which will include additional risk controls where these have been identified. The responsible person will vary from area to area or school to school e.g. Head of School or Discipline, Workshop or Laboratory manager or Chief Investigator.

The Manager or Supervisor is also responsible for ensuring that periodically (e.g. annually) the Faculty or Division Risk Management process is reviewed to check that hazards are being identified and reported, risk assessments are being conducted and documented and risk controls have been implemented and that they are effective.

<u>Click here</u> for a full risk assessment template;

SUMMARY OF HOW TO COMPLETE A RISK ASSESSMENT

- 1. Complete the title of the Risk Assessment, the name of the person completing the assessment and the date.
- 2. List the activity in steps or the equipment or materials within the space.
- 3. List the hazards for each of the steps or pieces of equipment.
- 4. Use the Risk Matrix to calculate the level of risk
- 5. List the existing risk controls.
- 6. Use the Risk Matrix again to calculate the risk with the controls in place
- 7. List the residual hazards.
- 8. List the additional risk controls required to reduce the residual risk
- 9. Complete the Summary of Requirements section on the first page.
- 10. Consult and have signed off.
- 11. Regularly review.

RESEARCH AND TEACHING SAFETY REVIEWS

A special process is used for assessing the risks and risk controls for research and teaching projects. The assessment is an essential process for obtaining approval for the activity, some of which may be a regulatory requirement e.g. work with Genetically Modified Organisms (GMOs).

The Safety Review Form is to be utilised for review of these activities that may have inherent hazards and require peer review by a Technical Committee or Subject Matter Expert before proceeding. For more information refer to Managing Health and Safety risks in the Health and Safety webpage http://www.newcastle.edu.au/current-staff/working-here/work-health-and-safety/managing-health-and-safety-risks

FINALLY

Risk assessments are an integral part of managing hazards and risks in the workplace. By completing a thorough risk assessment of work spaces and work activities we will contribute towards creating safe and healthy environments for work and study.

We hope that this module, and the resources provided, have helped you to gain a better understanding, and recognise the value, of risk assessments. You can print out a certificate of <u>completion</u> for your record.

If you have any remaining questions regarding Risk Management, please click on the link below:

http://www.newcastle.edu.au/current-staff/working-here/work-health-and-safety

Or contact the Health and Safety Team

Phone: 02 4033 9999

Email: healthandsafety@newcastle.edu.au