

This Guideline relates to OHS Procedure –
[Hazard Identification, Risk Assessment and Control \(HIRAC\)](#)

1. Selection

The first step of the HIRAC review is to select an area, task or activity. Priority should be given to areas, tasks or activities thought to present special risks, based on:

- past experience (e.g. accidents, near-misses, complaints)
- concerns expressed by staff
- requirements of legislation or University policies and procedures (e.g. workplace changes)
- requests from the various Health and Safety Teams, etc.

2. Hazard Identification

Hazards can be grouped under various categories, as listed below. The items listed under each category are provided as examples.

Bio-mechanical and Postural

Note: where the main hazards associated with an activity or task relate to manual handling, a special HIRAC form should be used. It is available at: <http://www.federation.edu.au/staff/working-at-feduni/risk,-health-and-safety/forms-and-templates>

- Repetitive or sustained postures, movements or forces as listed below for more than thirty minutes at a time, or for more than two hours over a workday
 - Excessive bending or twisting of back or neck in any direction
 - Working with hand(s) above shoulders
 - Reaching to front/side more than 30cm from body
 - Reaching behind body
 - Squatting, kneeling, crawling, semi-lying or jumping
 - Standing with most of body weight on one leg
 - Twisting, turning, grabbing, picking or wringing actions with fingers, hands or arms
 - Working with fingers close together or wide apart
 - Very fast movements
 - Excessive bending of wrist(s)
 - Carrying with one hand or one side of the body
 - Pushing, pulling, dragging, holding or restraining
- High force actions as listed below
 - Lifting, lowering or carrying heavy loads
 - Applying uneven, fast or jerky forces
 - Sudden/unexpected forces
 - Pushing/pulling objects hard to move or stop
 - Awkward grips
 - Throwing, catching, hitting, kicking or jumping
 - Holding, restraining or supporting person, animal or heavy object

Physical Environment and Workplace Design

- Poor housekeeping, uncontained spillages or wastes
- Uneven or slippery work surfaces
- Obstacles in passageways, near equipment, risk of collision with stationary objects, etc
- Inadequate work platforms, stairs, ladders, guardrails, harnesses, etc, for work at height
- Personnel access within two metres of edge of roof, high place of work, etc
- Unprotected openings or gaps in walkways and platforms
- Poor lighting
- Exposure to harmful noise levels
- Confusing or inadequate labelling of controls
- Mismatch between plant, workplace, office workstation design, activity or task and user physical characteristics (height, strength, speed, mobility, fitness, etc)

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- Body parts coming in contact with hot components during testing, inspection, operation, maintenance, cleaning or repair
- Exposure to camp fires and hot items from fires
- Fall or collapse of ground, materials, plant, structures, etc
- Exposure to extremely cold materials or components (e.g. dry ice)
- Exposure to radiation (ionising and non-ionising, lasers)
- Entry into cool rooms

Mechanical

- Hair, clothing, jewellery, rags, etc, liable to become entangled in moving components
- Uncontrolled or unexpected movement of machinery, components, work pieces, vehicles or loads
- Inability to slow, stop or immobilise machines, vehicles
- Body parts coming in contact with moving, sharp, hot, or "live" components during testing, inspection, operation, maintenance, cleaning or repair
- Possibility of traffic accident
- Persons or body parts trapped or sheared between moving component and fixed plant, materials or structures
- Persons pushed, pulled or thrown off plant, structures
- Machines, components, or materials disintegrating (e.g. grinding wheels)
- Persons being injured by damaged, poorly maintained or unguarded equipment (including electrical components)
- Components, work pieces, fluids, etc, being ejected

Electrical

- Contact with "live" components during testing, inspection, operation, maintenance, cleaning or repair
- Contact with overhead power lines
- Contact with underground power cables
- Explosion or ignition of electrical components, etc
- Unauthorised access to electrical services, switchboards, controls, etc

Chemicals and Toxicity

- Explosion or ignition of gases, vapours, liquids, dusts, etc
- Exposure to toxic concentrations of chemicals (skin, inhalation, ingestion, etc)
- Exposure to oxygen-depleted atmospheres
- Damage to gas lines, compressed gas cylinders, chemical storage containers, etc

Biological and Human

- Exposure to venomous or dangerous animals
- Exposure to toxic natural substances (plant, mushrooms, gases, etc)
- Exposure to (potentially) infectious substances
- Accidental collision with another person
- Assault by another person (*Note: where workplace violence is being reviewed, special risk assessment forms should be used. They are available from Risk, Health and Safety, Ext 9370.*)

Organisational and Procedural Arrangements

- Insufficient first-aid equipment or trained personnel
- Insufficient evacuation, emergency or rescue planning and facilities
- Access to hazardous equipment by unauthorised or untrained people
- Insufficient job rotation, rest breaks
- Inappropriate, insufficient or poorly maintained personal protective equipment

Psycho-social Environment and Task Design

- Insufficient consideration given to the probability of human error and its consequences
- Lack of clarity in work roles of employee(s)
- Lack of control or recognition in work roles of employees

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- Mismatch between task demands and workers'/people's behaviour or capabilities
- Insufficient consideration given to consultation prior to workplace changes

Natural Environment

- Drowning
- Bushfires
- Persons becoming lost or ill in remote locations
- Possibility of being engulfed in loose or crumbling ground
- Exposure to extreme environmental conditions (hot, cold, dry, wet, snowy, stormy, etc)
- Possibility of tree limbs falling
- Lightning in exposed locations

3. Risk Assessment

Risk assessments are based on two key factors:

- the consequence of any injury/illness resulting from the hazard, and
- the likelihood that the injury/illness will actually occur.

		CONSEQUENCE				
		Insignificant	Minor	Moderate	Major	Severe
LIKELIHOOD	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Medium	Medium	High	High	Extreme
	Possible	Low	Medium	Medium	High	High
	Unlikely	Low	Medium	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

For further details and definitions on conducting a risk assessment, refer to the University's [Risk Assessment Guideline](#).

4. Risk Control

Urgent action is required for risks assessed as Extreme. The actions required may include:

- instructions for the immediate end of the work, process, activity, etc
- isolation of the hazard until more permanent measures can be implemented.

Actions taken to address an Extreme risk must be documented on a [Hazard/Near-Miss Report](#) form.

Documented control plans with responsibilities and completion dates are required for High and Medium risks. (Refer to HIRAC Report available at: <http://www.federation.edu.au/staff/working-at-feduni/risk,-health-and-safety/forms-and-templates>)

The risk control hierarchy ranks risk control measures in decreasing order of effectiveness. Risk control measures should always aim as high in the list as practicable. Control of any given risk generally involves several measures drawn from the various options (except if the hazard is eliminated).

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Risk Control Hierarchy:

- A. Elimination of hazard: examples include the proper disposal of redundant items of equipment that contain substances such as asbestos or PCBs, the removal of excess quantities of chemical accumulated over time in a laboratory, etc. The elimination of hazards is 100% effective.
- B. Substitution of hazard: examples include the replacement of solvent-based printing inks with water-based ones, of asbestos insulation or fire-proofing with synthetic fibres or rockwool, the use of titanium dioxide white pigment instead of lead white, etc. The effectiveness of substitution is wholly dependent on the choice of replacement.
- C. Engineering controls: examples include the installation of machine guards on hazardous equipment, the provision of local exhaust ventilation over a process area releasing noxious fumes, fitting a muffler on a noisy exhaust pipe, etc.
- D. Administrative controls: include training and education, job rotation to share the load created by demanding tasks, planning, scheduling certain jobs outside normal working hours to reduce general exposure (e.g. planning demolition and building works during summer recess), early reporting of signs and symptoms, instructions and warnings, etc. Administrative control measures typically require significant resources to be maintained over long periods of time for continuing levels of effectiveness.
- E. Personal protective equipment (PPE): includes safety glasses and goggles, earmuffs and earplugs, hard hats, toe-capped footwear, gloves, respiratory protection, aprons, etc. Research has shown that the effectiveness of personal protective equipment in realistic work situations is quite low. PPE is therefore best seen as a “last line of defence” against hazards to be used in conjunction with other risk control measures.

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