Guideline: Plant (equipment) risk assessment guidelines

Purpose

To support the University’s plant (equipment) management policy and procedure to achieve a safe and healthy workplace.

Guideline

Scope

1. This guidance material is to support the University’s Plant management policy and procedure to achieve a safe and healthy workplace where plant is involved in endeavours associated with undertaking University business.

Risk Management Process

2. A risk management approach is used in this guideline. This is a four-step process:
   - Step One – Identify Hazards
   - Step Two – Assess risks
   - Step Three – Determine risk controls
   - Step Four – Monitor & review risk control

3. Specialist technical advice and assistance is available from Occupational Health and Safety (OHS) and other advice on risk assessment and management is available through the regulator, Comcare.

4. The risk management process at the University is developed around the life cycle stages of plant. Use of the Plant – Risk Assessment and Management Summary (PRAMS) and Plant pre-purchase assessment checklist is the suggested means of documenting the risk assessment, management decisions and operator guidance. The PRAMS also identifies the hazard level of an item of plant and its risk category when in use. Once the hazard level is identified, the required actions to reduce risks are indicated.

5. Risk assessment should be undertaken on new and existing items of plant
to achieve safety, compliance and best use of University resources, as far as is reasonably practicable. The process is best incorporated into the purchasing and operating procedures and/or associated guidance material for plant available in a Budget Area.

6. The preferred risk management process for plant involves four (4) steps:

**Step One – Identify Hazards**

7. Identify the hazard/s – identify aspects of the plant that may cause harm (injury or illness) in all aspects of:
   - the physical plant;
   - the operation or work practice involving use of the plant; and
   - the environment in which the plant is used.

8. From this step, the hazard level of the plant can be determined as low, medium or high.

9. Classes of hazards identified for plant include:
   - Physical hazards e.g. electrical, hot/cold e.g. boilers, autoclaves, liquid nitrogen and cold rooms, entanglement; crush; explosion e.g. high pressure systems, pressure vessels, compressed air; noise and vibration e.g. powered mobile plant, impact tools;
   - Chemical hazards e.g. corrosive, toxic, or poisonous substances;
   - Biological hazards e.g. mould and mildew, vermin, pathogens, viruses;
   - Radiation hazards e.g. x-ray equipment, infrared or ultraviolet light, microwaves; and
   - Ergonomic hazards e.g. A plant operator’s posture during operation, machinery controls design; psychosocial environmental hazards e.g. work targets, workplace relationships.

**Step Two – Assess risks**

10. Assess the risk posed by the identified hazard/s (at least in terms of likelihood and consequence).

11. For each identified hazard –
   - Determine the likelihood of the identified hazard causing harm to an operator, people in area, or the environment.
   - Determine the consequence of injury, illness, damage or harm occurring in its intended use by operators or its interaction with the environment.
Assign a risk level using the matrix as per the PRAMS form or the following table (other risk assessments models may be applicable).

Table: Risk Matrix

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Insignificant</td>
</tr>
<tr>
<td>Rare</td>
<td>L</td>
</tr>
<tr>
<td>Unlikely</td>
<td>L</td>
</tr>
<tr>
<td>Possible</td>
<td>L</td>
</tr>
<tr>
<td>Likely</td>
<td>M</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>H</td>
</tr>
</tbody>
</table>

Code:

Risk Rating:

- Low risk (L) – managed by routine activities
- Moderate risk (M) – management responsibility should be specified
- High risk (H) – senior management notified
- Extreme risk (E) – immediate action

Likelihood of harm:

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>May only occur in exceptional circumstances</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Could occur at some time</td>
</tr>
</tbody>
</table>
### Possible

Might occur at some time

<table>
<thead>
<tr>
<th>Likely</th>
<th>Will probably occur in most circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Certain</td>
<td>Expected to occur in most circumstances</td>
</tr>
</tbody>
</table>

#### Consequence (significance of associated impact)

<table>
<thead>
<tr>
<th>Insignificant</th>
<th>Not worth taking action over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Consequences can be readily absorbed but management effort is still required to minimise impacts</td>
</tr>
<tr>
<td>Moderate</td>
<td>Significant event, can be managed under normal procedures</td>
</tr>
<tr>
<td>Major</td>
<td>Critical event, which with proper management, will be endured</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>Disaster with potential to lead to collapse</td>
</tr>
</tbody>
</table>

*Modified from the Australian / New Zealand Risk Management Standard.*  
*AS/NZS4360: 1999*

#### Consultation

12. Consultation with operators, specialists and management is an important facet of risk assessment along with consideration of existing risk controls e.g. regulations, industry standards, operator certification etc. Specialist advice and resources are available from OHS.

#### Documentation

13. Consider collecting a Plant Dossier on the Plant or equipment, and make this available to relevant personnel.

14. Use the Plant – Risk Assessment and Management Summary (PRAMS) form to document risk and actions. The hazard level indicates the extent of the required assessment of risk for the use of plant in its environment.
Refer to existing documented risk assessments for similar plant.

15. The risks associated with the identified hazards are assessed individually and then collectively, to determine their interaction in the context of the plant’s intended use. It is important to differentiate minor and acceptable operational risk, from major strategic and operational risks.

16. Where a variance in risk assessment occurs between assessors, a competent person familiar with the plant should undertake a technically objective assessment to determine risks and appropriate controls.

Risk categories

17. The current ANU workshops procedure for plant allows equipment to be categorised into the following risk categories:

A. Low risk  
B. Medium risk  
C. High risk  
D. Extreme risk.

18. This category system is also being used in ANU’s Maximo system.

19. For Risk Category A plant, complete the recommendations in the table below. The guidance material may provide some assistance. No formal risk assessment documentation or registration of plant is needed where the plant can be identified as low risk i.e. it is not likely to cause injury due to its inherent low hazards and any consequence, if injury were to occur, is negligible.

20. For Risk Category B, C and D plant – continue with the risk assessment process. To identify the most appropriate risk controls and obtain the preferred residual risk, higher category plant needs to be assessed in detail in the context of its intended use, operators and environment (using PRAMS).

Table: Examples of common plant and their risk management at the ANU.

<table>
<thead>
<tr>
<th>Examples of Common Plant at ANU</th>
<th>Required Action For Risk Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non–powered hand tools e.g. screwdriver, chisel, hammer etc. Small office equipment e.g.</td>
<td>No formal assessment required beyond pre-purchase risk assessment (or similar documentation for existing equipment) Normal maintenance procedure</td>
</tr>
</tbody>
</table>
### Category A PLANT

- **Manual stapler, Computer, Table, Chair.**
- No operating procedures beyond that provided by supplier
- Consult Ergonomic guidelines for office based equipment use
- No requirement to register

### Category B PLANT

- Powered hand tools, bending equipment, hydraulic press, bench grinder, power hacksaw, cold saw,
- Large office equipment e.g. photocopier, printer
- **Plant Pre Purchase assessment**
  - Risk assessment documented prior to operation
  - Document operational procedures
  - Consider Registering item of plant (onto Maximo database)
  - Develop maintenance schedule
- In addition to the above, **extreme hazard level plant (D) requires specialist advice from OHSIM and management approval prior to purchase or manufacture.**

### Category C, D PLANT

- Drill press, lathes, milling machine, welding equipment, bandsaws, router, circular saw
- Tractors, electric vehicles, arc welding, vehicle hoists.

### Step Three – Determine risk controls

21. Take action to eliminate or reduce the risks to a reasonably practicable level, ensuring that no new hazards are introduced.

22. The overall risk must be reduced to reasonably acceptable levels. Purchasing and design controls are the most effective to avoid introducing risk into the workplace (i.e. elimination of the hazard). Budget Area must take all reasonably practicable steps to ensure that:
   - risk control measures are maintained and effectively monitored;
   - effective and safe systems of work are implemented and appropriately supervised;
   - training programs support risk management principles.

23. If the plant/equipment is categorised as medium or high risk, then risk management action by the responsible Budget Area includes:
• Completion of a Pre-Purchase Risk Assessment and/or PRAMS forms;
• Develop a standard operational procedure for use and associated training;
• Development of procedures for the safe shutdown in the event of unsafe or emergency response;
• A maintenance schedule; and
• Registering the plant item (preferably onto the Maximo system).
• All plant categorised as extreme risk requires:
  • the PRAMS to be completed prior to the plant being purchased or manufactured, and for existing plant;
  • Research, planning, senior management approval, and specialist advice from OHS Branch must support this assessment;

24. Any significant risks must be addressed (ideally) prior to purchase/manufacture and managed to an acceptable level of risk in operation.

25. Residual (remaining) risk may be acceptable and the delegate in the budget area must document recommended risk control strategies and safe operating instructions.

26. Responsibility for risk controls across the life cycle of the plant should be clear in operating procedures. Existing systems in use at the ANU (e.g. job cards, Maximo database, quality systems) can support documentation of risk control strategies. The ANU’s Workshop and Trade Safety Course and manual may provide further guidance.

27. The risk assessment documents should be supplied to the user if the budget area is manufacturing or supplying plant.

Step Four – Monitoring & review of risk control

28. Review and monitor the effectiveness of the risk reduction measures.

29. The budget area must review the risk assessment upon receipt/redesign or modification/installation/commissioning of the plant to revise controls and documentation.

30. Consideration of changes in business practice, external controls (regulations), and the operating environment is required to ensure the risk is adequately managed. The frequency of this review is determined as part of the area’s risk management plan or as imposed by external factors. An annual review is suggested.
31. Access to shared ANU knowledge is recommended during this review. Advice and resources are available from OHS Branch.

[Note quick links to be developed to high hazard plant; FAQs and Plant Procedure]