* Use this form to identify foreseeable hazards in student projects and controls that will be used
* Completion is mandatory before work starts
* Please refer to the Student Project Safety Assessment flow chart for further instructions on how to complete this form [PSA Flowchart](http://www.deakin.edu.au/__data/assets/pdf_file/0020/913223/PSA-flowchart.pdf)
* Medium risk after controls are in place need to be discussed with Technician and Academic Supervisor together
* **HIGH RISK** work **MUST STOP** until measures can implemented to reduce the risk **lower than HIGH**
1. Section 1 ¬ Project Information

|  |  |
| --- | --- |
| **Student Name:** | Name |
| **Unit Chair:** | Name |
| **Study Unit:** | Unit |
| **Supervisor:** | Name |
| **Technical Officer:** | Name |
| **Laboratory to be used:** | Room Numbers |
| **Project Title:** | Title |
| **Date of commencement:**  | Date |
| **Expected completion date:** | Date |
| **Estimated cost of project:** | $ |
| **Names of any additional participants:** | Name |

|  |
| --- |
| **Project brief:** Aim & objectives |
| **Outline of how the project will be completed (in simple terms):** Condensed methodology |

# **Section 2 ¬ Safe Manufacturing**

The purpose of Section 2 is to identify any hazards that can be designed out of any items to be manufactured and/or assembled during the project. This section is to be competed ***only*** if the project contains an item(s) that requires manufacturing and/or assembly.

**Outline of your design (or attach file):** Design outline

## Hazards:

Complete [Appendix A Worksafe Plant Hazard Checklist](#_Appendix_A_–) to identify any potential hazards. Summarise findings in the table below, with the details of how you can change your design to minimise risk.

|  |  |
| --- | --- |
| **Hazard(s) identified**( [Appendix A Worksafe Plant Hazard Checklist](#_Appendix_A_–))e.g. Someone’s fingers may get caught between the two rollers of the paper processing machine | **How can your design be altered to eliminate or reduce the risk?**([Appendix B Controls to consider](#_Appendix_B_))e.g. Build guarding over rollers |
| Hazard | Control measures |
| Hazard | Control measures |

Table 2.1

\*Click the **+** in the text box to add more rows

Table 2.2

# **Section 3 ¬Working Safe**

The purpose of Section 3 is to identify any hazards that will be encountered whilst completing the project. This section is to be completed ***only*** if the project requires the use of hazardous equipment, materials or tasks.

Consult with Technical Staff in the area where the project will be undertaking prior to completing this section. Approval is required by a Technical Staff member before work can commence.

## Hazardous Equipment (Drills, 3d printer’s etc.)

List all equipment to be used during project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hazardous equipment to be used** | **Training status**  | **Will the equipment use vary from the SOP?**  | **If yes provide details of variation and additional controls** |
| Text | Choose an item | Yes/No | Variation details |
| Text | Choose an item | Yes/No | Variation details |

Table 3.1

\*Click the **+** on the right to add more rows

## Materials (Chemicals, metals, polymers, adhesives, fibres, dust etc.)

|  |  |  |
| --- | --- | --- |
| **Materials you will be using:** | **Is the material hazardous? (refer to SDS and chemical risk assessment form)** | **Is the risk assessment attached?** |
| Text | Choose an item | Choose an item |
| Text | Choose an item | Choose an item |

Table 3.2

\*Click the **+** on the right to add more rows

## Job Safety Assessment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task or Activity**you plan to perform in roughly the sequence they will be carried out | **Hazard(s)**([Appendix A Worksafe Plant Hazard Checklist](#_Appendix_A_–) ) | **Potential consequence(s)**([Appendix C Risk Matrix](#_Appendix_C_)**)** | **Control measures**to eliminate or minimise risk ([Appendix B Controls to consider](#_Appendix_B_)) | **Risk rating after controls in place**as per risk matrix ([Appendix C Risk Matrix](#_Appendix_C_) ) |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |
| Task | Hazard | Potential Consequence(s) | Control Measures | Choose an item. |

Table 3.3

Risk ratings prior to controls are to be determined using [Appendix C Risk Matrix](#_Appendix_C_). However, these ratings are not required to be recorded on this form. Risk ratings after controls need only be recorded. If the risk is deemed ***low*** no controls are required, therefore record ***low*** as the risk.

\*Click the **+** on the right to add more rows

## PSA Sign Off:

|  |
| --- |
| **Sign off by Academic Supervisor:** The Academic Supervisor has reviewed the PSA to ensure that the foreseeable hazards and Budgets have been identified and addressed adequately. |
| **Signature:**  |  |
| **Technical Officer check:** The relevant Technical Officer(s) has reviewed the project & estimated timeframes. Obtain signatures from the relevant Technical Staff for the laboratory you will be using.This signature is only required if you will be using equipment in labs, or getting work done, or needing purchases to made by Technicians.  |
| **Signature:**  |  |
| **Signature:**  |  |
| **Signature:**  |  |

The Technician / Technicians who you are dealing with will be able to sign off on this.

If you require further guidance or you are not sure who the Technician is, please see

Appendix D at the end of this form.

# Appendix A ¬ Worksafe Plant Hazard Checklist

|  |  |
| --- | --- |
| **A Mechanical** | **I. High Temperature or Fire** *Can anyone:* |
| **A1** | Entanglement (can anyone’s hair, clothing, jewellery rags or other materials become entangled with moving parts of the plant) |[ ]  **I1** | Come into contact with objects at high temperatures? |[ ]
| **B Crushing** *Can anyone be crushed due to:* | **I2** | Be injured by fire? |[ ]
| **B1** | Material falling off the plant? |[ ]  **J. Explosion** *Can anyone be injured by explosion of:* |
| **B2** | Uncontrolled or unexpected movement of the plant or its load? |[ ]  **J1** | Gases, vapours, liquids, dusts or other substances triggered by the Operation of the plant? |[ ]
| **B3** | Lack of capacity for plant to be slowed, stopped or immobilised? |[ ]  **K. Suffocation**  *Can anyone* be suffocated*:* |
| **B4** | The plant tipping or rolling over? |[ ]  **K1** | Due to lack of oxygen, or atmospheric contamination? |[ ]
| **B5** | Parts of the plant collapsing? |[ ]  **L. Ergonomic** *Can anyone be injured due to:* |
| **B6** | Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair? |[ ]  **L1** | Constrained body posture or the need for excessive effort? |[ ]
| **B7** | Being thrown off or under plant |[ ]  **L2** | Poorly designed seating? |[ ]
| **B8** | Being trapped between the plant and materials or fixed structures |[ ]  **L3** | Design deficiency causing mental or psychological stress? |[ ]
| **B9** | Other factors not mentioned |[ ]  **L4** | Inadequate or poorly placed lighting? |[ ]
| **C. Cutting, Stabbing & Puncturing** *Can anyone be cut due to:* | **L5** | Poorly designed control panels, switches or access to E-stops |[ ]
| **C1** | Coming into contact with sharp or flying objects? |[ ]  **L6** | Other factors not mentioned? |[ ]
| **C2** | Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair? |[ ]  *(where a risk of manual handling injury exists a separate manual handling Risk Assessment should be performed)* |
| **C3** | The plant, parts of the plant or work pieces disintegrating? |[ ]  **M. Slipping, Tripping or Falling** *Can anyone using, or close to the plant, slip, trip or fall due to:* |
| **C4** | Work pieces being ejected? |[ ]  **M1** | Uneven or slippery work surfaces? |[ ]
| **C5** | Mobility of the plant? |[ ]  **M2** | Lack of proper stairs or ladders? |[ ]
| **C6** | Uncontrolled or unexpected movement of the plant? |[ ]  **M3** | Obstacles being placed in the vicinity of the plant? |[ ]
| **C7** | Other factors not mentioned? |[ ]  **M4** | Other factors not mentioned? |[ ]
| **D Shearing** *Can anyone’s body parts be sheared:* | **M5** | Poor floor or walking surfaces, such as a lack of grip? |[ ]
| **D1** | Between two parts of the plant, or between a part of the plant and a work piece or structure |[ ]  **M6** | Steep walking surfaces |[ ]
| **E Friction** *Can anyone be burnt due to contact with:* | *Can anyone fall from a height due to:* |
| **E1** | Moving parts of the plant, or materials handled by the plant? |[ ]  **M7** | Lack of a proper work platform? |[ ]
| **F. Striking** *Can anyone be struck by moving objects due to:* | **M8** | Poor housekeeping eg swarf, debris or spillage not cleaned up? |[ ]
| **F1** | Uncontrolled or unexpected movement of the plant or material handled by the plant? |[ ]  **M9** | Lack of guardrails or other suitable edge protection? |[ ]
| **F2** | The plant or work pieces disintegrating? |[ ]  **M10** | Unprotected holes or gaps? |[ ]
| **F3** | Work pieces being ejected? |[ ]  **M11** | Collapse of the supporting structure? |[ ]
| **F4** | Mobility of the plant? |[ ]  **M12** | Other factors not mentioned? |[ ]
| **F5** | Other factors not mentioned? |[ ]  **N. Temperature** |
| **G. High Pressure Fluids** | **N1** | Can anyone suffer ill-health due to exposure to high or low temperatures? |[ ]
| **G1** | Can anyone come into contact with fluids under pressure, due to plant failure or misuse of plant |[ ]  **O. Other Hazards** *Can anyone be injured due to:* |
| H **Electrical** *Can anyone be injured by shock or burnt due to* | **O1** | Chemicals? |[ ]
| **H1** | Contacting live electrical conductors? |[ ]  **O2** | Toxic gas or vapour? |[ ]
| **H2** | Working in close proximity electrical conductors? |[ ]  **O3** | Fumes? |[ ]
| **H3** | Overload of electrical circuits? |[ ]  **O4** | Dust? |[ ]
| **H4** | Lack of isolation procedures? |[ ]  **O5** | Noise? |[ ]
| **H5** | Damaged or poorly maintained electrical leads or cables or switches? |[ ]  **O6** | Vibration |[ ]
| **H6** | Water near equipment |[ ]  **O7** | Radiation |[ ]
| **H7** | Other factors not mentioned? eg tested & tagged |[ ]  **O8** | Other factors not mentioned? |[ ]

Checklist developed by Worksafe Victoria to assist with identifying hazards in plant ***VWA 556/03/11.***

# Appendix B ¬ Controls to consider

The samples below from Worksafe can be used to assist in controlling the hazards posed by equipment, material and tasks. This is not a comprehensive list of controls, merely a guide. Consult the manufacturer, Worksafe, Technical and Academic staff to help determine which controls will best suit the item(s) and tasks the project requires to be used / manufactured / performed.

|  |  |
| --- | --- |
| **Plant or Machinery** | Enclose very noisy plant or machinery in sound-proof barriers or relocate in separate area from the majority of workers |
| Guard moving parts of the plant or machinery (fixed or adjustable guards, photo-electric, pressure sensing mats). |
| Install two – hand controls. |
| Interlock guards with power supply (power supply is automatically switched off when guard is opened or removed). |
| Provide feeder tables or rollers. |
| Make guards difficult to remove or machinery difficult to disable. |
| Use clamps, supports, guides or stops to position workpieces. |
| Fit lock out switches to all plant and machinery to disconnect power supply while being cleaned, serviced or repaired. |
| Guard or shield hot or cold machine components from accidental contact. |
| Fit emergency stops to plant and machinery which is easy to see, operate and reach at all times. |
| Make sure plant or machine controls are easy for the operator to understand and reach. |
| Introduce lock-out procedures and provide locks and tags. |
| Write safe operating procedures for all machinery operations. |
| Clearly identify with warning signs and line marking areas where hot processes are carried out. |
| Provide workers likely to be burnt by hot material with personal protective equipment such as gauntlets, aprons, and face shields. |
| Provide workers with good quality hearing protection. |
| **Tools or Equipment** | Make sure tools or equipment with rotating or moving blades or cutters are fitted with guards. |
| Make sure electrically powered equipment is only used if protected by a safety switch (Residual Current Device). |
| Provide industrially insulated power extension cords. |
| Prevent mobile plant or vehicles driving over power cords. |
| Regularly test and tag electrically powered equipment. |
| Write safe operating procedures for all powered tools and equipment. |
| Train workers on the safe use of tools and equipment. |
| Introduce job rotation and frequent rest breaks for jobs which involve the risk of injury from mechanical vibration. |
| Provide safety glasses or face shields. |
| Provide workers with good quality hearing protection. |
| Provide workers likely to be burnt by hot material with personal protective equipment such as gauntlets, aprons and face shields. |

|  |  |
| --- | --- |
| **Work Environment** | Install ventilation extraction systems in hot work areas. |
| Fit localised lighting on machines to enable operators to comfortably view work pieces. |
| Suspend electrical power lines and air lines. |
| Round-off edges and corners of benches, equipment or fittings. |
| Install safety barriers to protect pedestrians from vehicles or mobile plant. |
| Install mirrors and flashing lights to warn of approaching vehicles or mobile plant. |
| Fit reverse warning beepers and lights to mobile plant for example, forklifts. |
| Install hand rails on ramps and steps. |
| Install non-slip floor surfaces. |
| Install good lighting along walkways. |
| Removing overhanging objects from work areas. |
| Provide fixed plant and machinery with drip trays. |
| Supply cool water for workers required to work in hot areas. |
| Regularly sweep and clean floors. |
| Keep walkways and work areas uncluttered. |
| Identify walkways with painted yellow lines. |
| Have available temporary signs to warn of slippery surfaces.  |
| Introduce job rotation and frequent rest breaks for jobs which could cause workers to suffer from the extremes of hot or cold. |
| Provide workers with a variety of tasks. |
| Introduce job rotation for jobs which may be fatiguing. |
| Provide personal protective clothing and footwear to minimise the effects of cold. |
| **Manual Handling** | Reduce the weight of the object to be lifted or carried; for example, smaller containers or less material per container. |
| Make sure containers are easy to lift or carry; for example, they are provided with handles or grips, or are a comfortable shape and size. |
| Change the height of workbenches or shelving to reduce the need to bend or overreach. |
| Provide equipment to assist with the lifting carrying or moving; for example, hoists, trolleys, scissor lifts, conveyors. |
| Make sure tools or equipment are comfortable and easy to lift, use or operate. |
| Suspend heavy tools or equipment. |
| Provide footrests, comfortable and adjustable seating and cushioned floor coverings. |
| Reduce the distance to carry objects. |
| Change the work process so that objects do not have to be lifted or moved as often by hand. |
| Introduce job rotation with a mixture of repetitive and non-repetitive tasks. |
| Provide training in safe manual handling. |
| Make sure there is a two – person lift. |
| Provide frequent short rest breaks for workers carrying out repetitive tasks. |

|  |  |
| --- | --- |
| **Chemicals or Substances** | Use less dangerous chemicals or substances. |
| Use paste or pellets instead of powders. |
| Apply paint by brush instead of spraying. |
| Store chemicals in sealed containers. |
| Install an extraction system to remove fumes vapours or dust. |
| Obtain Material Safety Data Sheets for all chemicals or substances. |
| Follow safety precautions contained in Material Safety Data Sheets. |
| Make sure all containers are labelled. |
| Write safe operating procedures for the handling or use of chemicals or substances. |
| Train workers on the safe handling or use of chemicals or substances. |
| Provide first aid, safety showers, eye wash. |
| Provide proper personal protective equipment such as gloves, aprons, cartridge respirators, safety glasses and face shields. |

# Appendix C ¬ Risk Matrix

|  |  |
| --- | --- |
|  | Likelihood |
| Very unlikelyCould happen but probably never will | UnlikelyCould happen but very rarely | LikelyCould happen some time | Very likely Could happen at any time |
| Potential Consequences | Kill or cause permanent disability or ill health | Medium | Medium | High | High |
| Long term illness or serious injury, inpatient | Low | Medium | Medium | High |
| Outpatient medical attention and several days off work | Low | Low | Medium | Medium |
| First aid needed | Low | Low | Low | Medium |
| Risk Priority : | Description |
| Low | Work may proceed – all should be aware of the hazard and its agreed management |
| Medium | Work cannot proceed without further consideration – re-evaluate the controls to lower the risk level before work is conducted. The work should not be conducted unless a high level of risk control can be demonstrated with minimal chance of failure.  |
| High | Work cannot proceed – work with this risk level cannot proceed/ should be stopped immediately. Review the task/ project and reduce the risk using the hierarchy of control and reassess.  |
| Where controls do not lower the residual risk to low, re-evaluation and consultation with your OHS Contact may be required. |

# Appendix D – Technical Contacts

Technical Coordinators will be able to help if needed.

Please contact the Coordinator for your area

**Leanne Farago** **– Civil Engineering**

Technical Services Coordinator (Soil, Structures, Concrete and Water)

Phone: +61 3 5227 2289

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Technical Services Coordinator (Polymer Prototyping, Mechatronics and Electrical)

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**Damien Elderfield – Mechanical Engineering & Materials**

Technical Services Coordinator (Mechanical, Materials and VR, AR)

Phone: +61 3 5227 9147

Mobile: 0439 709 710

Office Number: Ke1.101.04 - Digital Manufacturing Lab

damien.elderfield@deakin.edu.au

If the Technician or Technical Coordinator for area is unavailable, or you are unsure who to contact please contact:

**Craig McGill – Will guide you to the correct Technician**

Technical Manager

Mobile: 0428 642 584

Phone: 03 52273452

Location Ke3.201 - Kitchen

craig.mcgill@deakin.edu.au