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| 1. Hazard Management Details – General |
| **Plant/Equipment Item: Human Powered Vehicles**  | **Make/Model No.:**  | **Serial No.:**  |
| **School / Work Location:**  | **Region:**  |
| **Name of Person(s) Conducting Activity:** | **Date Conducted:**       |
| Human Powered Vehicles   http://hpv.olin.edu/Home_files/shapeimage_1.jpg | **Description of Use:** A Human Powered Vehicle (HPV) is a vehicle designed and constructed to utilise human power for propulsion.HPV are commonly constructed for, and used in competitions.The design of each HPV can vary considerably, creating unique safety considerations for each HPV. | **Summary of Key Risks:** **(refer to appropriate subsections)** * Entanglement
* Impact and cutting
* Shearing
* Ergonomics
* Radiation
* Friction;
* Slips/trips/falls
* Temperature and moisture
* Other (fumes and dust)
 |

Plant and Equipment Risk Management Form

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| 2. Documentation |
| **Relevant Legislation/Standards** | **Y / N** | **Comments** |
| **Is plant required to be registered?** | Y [ ]  N[x]   |  |
| **Is a user license required?** | Y [ ]  N[x]   |  |
| **Key Reference material**  |  | AS/NZS 1927 Pedal bicycles - Safety requirements AS/NZS 2063 Bicycle helmets  |
| **Plant Documentation** | **Y / N** | **Comments** |
| **Are operator’s manuals accessible?** | Y [ ]  N[x]   |  |
| **Is this a restricted use item?** | Y [ ]  N[x]   |  |
| **Does this item require safe use documents/test?** | Y [ ]  N[x]   |  |

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| 3. Hazard Identification |  |
| **Hazards Inspected** | **Risk Assessment** | **Description of Risk** | **Control Measures** |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **ENTANGLEMENT**Can anyone’s hair, clothing, gloves, cleaning brushes, tools, rags or other materials become entangled with moving parts of the plant or materials? | Y [x]  N[ ]  | Moderate | Possible | Medium | Body parts, long hair, loose clothing and jewellery may become entangled in moving parts. | Ensure all moving parts are appropriately guarded to prevent entanglement (e.g. chain guard).Ensure body parts, hair and loose clothing are kept clear of moving parts and jewellery is removed prior to operation. |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **IMPACT AND CUTTING INJURIES**Can anyone be crushed/cut/struck etc. due to: |  |  |  |  | Risk of injury due to:* Mobility of the HPV;
* Crash or collision (e.g. at high speed);
* Brake or structural failure;
* Instability of the HPV (e.g. poor design/traversing a critical slope); and
* Operating environment (e.g. adverse weather conditions, terrain etc.).
 | * Ensure HPV has a low centre of gravity to ensure stability of HPV.
* Incorporate appropriate safe design features (e.g. roll bar, seat belt etc.).
* Ensure appropriate PPE is worn (e.g. helmet, knee/elbow pads and appropriate footwear).
* Ensure the HPV operator is deemed as competent to drive the vehicle prior to operation.
* Ensure a competent person has assessed and approved the safe design/construction of the HPV.
* Ensure vehicle is only operated on appropriate surfaces and environments.
 |
| * Material falling off the plant?
 | Y [x]  N[ ]  | Minor | Unlikely | Low |
| * Uncontrolled/unexpected movement of plant/load?
 | Y [x]  N[ ]  | Minor | Unlikely | Low |
| * Lack of capacity to slow, stop or immobilise plant?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * The plant tipping or rolling over?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Parts of the plant disintegrating or collapsing?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Contact with moving parts during testing, inspection, operation, maintenance, cleaning or repair?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Being thrown off or under the plant?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Contact with sharp or flying objects? (e.g. work pieces being ejected)
 | Y [ ]  N[x]  |  |  |  |
| * The mobility of the plant?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Inappropriate parts and accessories being used?
 | Y [x]  N[ ]  | Minor | Unlikely | Medium |
| * Other
 | Y [ ]  N[x]  |  |  |  |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **SHEARING**Can anyone’s body parts be sheared between two parts of plant, or between a part of the plant and a work piece or structure? | Y [x]  N[ ]  | Minor | Unlikely | Low | Injury from moving parts during repair, maintenance or operation. | Ensure appropriate guarding of moving parts is incorporated into the design and construction of the HPV. |
| **PRESSURISED CONTENT**Can anyone come into contact with fluids or gases under high pressure, due to plant failure or misuse of the plant? | Y [ ]  N[x]  |  |  |  |  |  |
| **ELECTRICITY**Can anyone be injured or burnt due to: |  |  |  |  |  |  |
| * Live electrical conductors? (*e.g.* exposed wires)
 | Y [ ]  N[x]  |  |  |  |
| * Working in close proximity to electrical conductors?
 | Y [ ]  N[x]  |  |  |  |
| * Access to electricity?
 | Y [ ]  N[x]  |  |  |  |
| * Damaged or poorly maintained electrical leads, cables or switches?
 | Y [ ]  N[x]  |  |  |  |
| * Water near electrical equipment?
 | Y [ ]  N[x]  |  |  |  |
| * Lack of isolation procedures?
 | Y [ ]  N[x]  |  |  |  |
| * Other
 | Y [ ]  N[x]  |  |  |  |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **ERGONOMICS**Can anyone be injured due to: |  |  |  |  | Construction, operation and maintenance of the HPV may require repetitive movement and constrained body postures leading to musculoskeletal disorders. | Ensure construction and maintenance workers have regular rest breaks.Ensure operators have regular breaks and an appropriate level of personal fitness.Ensure the HPV is ergonomically designed to suit the operator/s. (e.g. adjustable seating). |
| * Poorly designed workstation?
 | Y [ ]  N[x]  |  |  |  |
| * Repetitive body movement?
 | Y [x]  N[ ]  | Moderate | Possible | Medium |
| * Constrained body posture or the need for excessive effort?
 | Y [x]  N[ ]  | Moderate | Possible | Medium |
| * Design deficiency causing psychological stress?
 | Y [ ]  N[x]  |  |  |  |
| * Inadequate or poorly placed lighting?
 | Y [ ]  N[x]  |  |  |  |
| * Does the plant impact on the surrounding workplace and create potential hazards? (Consider potential impact on the design and layout of the workplace)
 | Y [ ]  N[x]  |  |  |  |
| * Is the location of the plant inappropriate? (Consider potential effects due to environmental conditions and terrain)
 | Y [ ]  N[x]  |  |  |  |
| * Other
 | Y [ ]  N[x]  |  |  |  |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **RADIATION**Can anyone using the plant, or in the vicinity of the plant suffer injury or illness due to exposure to radiation in the form of any of the following:* infra-red radiation
* ultra violet light
* microwaves
 | Y [x]  N[ ]  | Minor | Possible | Medium | Exposure to UV radiation whilst operating or performing maintenance. | Ensure appropriate PPE (e.g. hat, sunglasses, sunscreen etc.) is worn. |
| **NOISE**Can anyone using the plant, or in the vicinity of the plant, suffer injury due to exposure to noise? | Y [ ]  N[x]  |  |  |  |  |  |
| **VIBRATION**Can anyone be injured or suffer ill-health from exposure to vibration? | Y [ ]  N[x]  |  |  |  |  |  |
| **FRICTION**Can anyone be burnt due to contact with moving parts, materials or surfaces of the plant? | Y [x]  N[ ]  | Moderate | Unlikely | Medium  | Contact with moving parts whilst operating or performing maintenance. | Ensure appropriate guarding of moving parts is incorporated into the design and construction of the HPV. |
| **SUFFOCATION**Can anyone be suffocated due to lack of oxygen, or atmospheric contamination?  | Y [ ]  N[x]  |  |  |  |  |  |
| **CONDITION**Is a hazard likely due to the age and condition of the plant? (*Consider how hard the machine has been worked, and whether it is used constantly or rarely).* | Y [ ]  N[x]  |  |  |  |  |  |
| Can anyone be injured as a result of the plant not serviced appropriately and/or maintained in line with manufacturer’s recommendations? | Y [ ]  N[x]  |  |  |  |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **SLIPS/TRIPS/FALLS**Can anyone using the plant, or in the vicinity of the plant, slip, trip or fall due to: |  |  |  |  | Operating the HPV in inappropriate environments or surfaces that it has not been designed to handle (e.g. gravel, dirt tracks, excessive slopes, wet surfaces etc.). | Ensure the HPV is only operated in appropriate environments or surfaces. |
| * Uneven, slippery or steep work surfaces?
 | Y [x]  N[ ]  | Moderate | Possible | Medium |
| * Poor housekeeping, e.g. spillage in the vicinity?
 | Y [x]  N[ ]  |  |  |  |
| * Obstacles being placed in the vicinity of the plant?
 | Y [x]  N[ ]  |  |  |  |
| * Inappropriate or poorly maintained floor or walking surfaces (i.e. lack of a slip-resistant surface, unprotected holes, penetrations or gaps?)
 | Y [ ]  N[x]  | Moderate | Possible | Medium |
| If operating or maintaining plant at height can anyone slip, trip or fall due to: |  |  |  |  |
| * Use of work platforms, stairs or ladders?
 | Y [ ]  N[x]  |  |  |  |
| * Lack of guardrails or other suitable edge protection?
 | Y [ ]  N[x]  |  |  |  |
| * Other
 | Y [ ]  N[x]  |  |  |  |

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| Hazards Inspected | Risk Assessment | Description of Risk | Control Measures |
|  | **Cons** | **Like** | **Risk****Level** |  |  |
| **FIRE AND EXPLOSION**Can anyone be injured by fire? | Y [ ]  N[x]  |  |  |  |  |  |
| * Can anyone be injured by explosion of gases, vapours, liquids, dusts, or other substances?
 | Y [ ]  N[x]  |  |  |  |
| **TEMPERATURE/MOISTURE**Can anyone come into contact with objects athigh or low temperatures? | Y [ ]  N[x]  |  |  |  | Operating HPV in adverse weather conditions (e.g. temperature extremes, high winds, storms etc.). | Ensure appropriate PPE is worn (e.g. wet weather /waterproof clothing). |
| * Can anyone suffer ill-health due to exposure to high or low temperatures?
 | Y [x]  N[ ]  | Moderate | Possible | Medium |
| * Can anyone be injured or suffer ill-health due to exposure to moisture?
 | Y [x]  N[ ]  | Minor | Possible | Medium |
| **OTHER**Can anyone be injured or suffer ill-health from exposure to: |  |  |  |  | HPV may be operated in dusty environments. | Ensure HPV is designed to minimise the effects of dust on operator (e.g. fully or partially enclosed cabin).Ensure appropriate PPE is used (e.g. goggles etc.). |
| * Chemicals?
 | Y [ ]  N[x]  |  |  |  |
| * Toxic gases or vapours?
 | Y [ ]  N[x]  |  |  |  |
| * Fumes/Dusts?
 | Y [x]  N[ ]  | Minor | Unlikely | Low |
| * Other? (please specify)
 | Y [ ]  N[x]  |  |  |  |
| **4. Risk Assessment Signoff** |
| Authorised By:       | Signature: | Date:       |

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| Consequence - Evaluate the consequences of a risk occurring according to the ratings in the top row

|  |  |  |
| --- | --- | --- |
| Descriptor | Level | Definition |
| **Insignificant** | **1** | No injury |
| **Minor** | **2** | Injury/ ill health requiring first aid |
| **Moderate** | **3** | Injury/ill health requiring medical attention |
| **Major** | **4** | Injury/ill health requiring hospital admission |
| **Severe** | **5** | Fatality |

3. Risk level - Calculate the level of risk by finding the intersection between the likelihood and the consequences

|  |  |
| --- | --- |
| Likelihood | Consequence |
| **Insignificant** | **Minor** | **Moderate** | **Major** | **Severe** |
| **Almost Certain** | Medium | High | Extreme | Extreme | Extreme |
| **Likely** | Medium | Medium | High | Extreme | Extreme |
| **Possible** | Low | Medium | Medium | High | Extreme |
| **Unlikely** | Low | Low | Medium | Medium | High |
| **Rare** | Low | Low | Low | Medium | Medium |

  | Likelihood - Evaluate the likelihood of an incident occurring according to the ratings in the left hand column

|  |  |  |
| --- | --- | --- |
| Descriptor | Level | Definition |
| **Rare** | **1** | May occur somewhere, sometime (“once in a life time / once in a hundred years”) |
| **Unlikely** | **2** | May occur somewhere within the Department over an extended period of time |
| **Possible** | **3** | May occur several times across the Department or a region over a period of time |
| **Likely** | **4** | May be anticipated multiple times over a period of timeMay occur once every few repetitions of the activity or event |
| **Almost Certain** | **5** | Prone to occur regularlyIt is anticipated for each repetition of the activity of event |

4. Risk Level/Rating and Actions

|  |  |
| --- | --- |
| Descriptor | Definition |
| **Extreme:** | Notify **Workplace Manager and/or Management OHS Nominee** immediately. Corrective actions should be taken immediately. Cease associated activity. |
| **High:** | Notify **Workplace Manager and/or Management OHS Nominee** immediately. Corrective actions should be taken within 48 hours of notification. |
| **Medium:** | Notify **Nominated employee, HSR / OHS Committee**. Nominated employee, OHS Representative / OHS Committee is to follow up that corrective action is taken within 7 days. |
| **Low** | Notify **Nominated employee, HSR / OHS Committee**. Nominated employee, HSR / OHS Committee is to follow up that corrective action is taken within a reasonable time. |

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