|  |  |
| --- | --- |
|  | **Hazardous Chemical Process**  **Risk Assessment** |

ASSESSMENT NUMBER

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Type | Type. | Type. | Type. | **-** | Type. | Type. | Type. | | Type. | Type. |  | |
| ***Title of Procedure:*** Click or tap here to enter text. | | | | | | | | | | | | | ***Risk Score:*** |
| Choose an item. |
| ***Assessor’s Name:*** | Click or tap here to enter text. | | | | | | | | ***Position:*** | | | | Click or tap here to enter text. |
| ***Contact Number:*** | Click or tap here to enter text. | | | | | | | | ***Work location:*** | | | | Click or tap here to enter text. |
| ***Date of assessment:*** | Click or tap here to enter text. | | | | | | | | ***Review date:*** | | | | Click or tap to enter a date. |
| ***Task/Procedure:*** Click or tap here to enter text. | | | | | | | | | | | | | |
| ***Diagram:*** Click or tap here to enter text. | | | | | | | | | | | | | |

**Section 1 IDENTIFICATION OF HAZARDOUS CHEMICALS**

All hazardous chemicals and Dangerous Goods that are or will be used in the work area must be identified and assessed. This includes any hazardous chemicals that might be produced during any work processes such as the finished products as well as isolated intermediates and by-products given off as wastes, residues or emissions.

Where a chemical is produced as an isolated intermediate or by-product and an SDS is not available, the equivalent information must be obtained by researching appropriate texts or consulting qualified, expert personnel.

|  |  |  |
| --- | --- | --- |
| ***Hazardous Chemicals to be used in Project:*** | | |
| **Chemical Name** | **CAS**  **Number** | **GHS Hazard Statement/s** |
| Click or tap here to enter text. | Type CAS | Click or tap here to enter text. |
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**Section 2 USAGE OF THE CHEMICAL/S**

|  |  |  |
| --- | --- | --- |
|  | Yes | No |
| Are any of the chemicals used in pure form? |  |  |
| Are any of the chemicals used in concentrated form? |  |  |
| Are any chemicals used in diluted form? |  |  |
| Are the health effects different if diluted or concentrated? |  |  |
| Are procedures in place to deal with a minor and major spill? |  |  |
| Are safe decanting and usage procedures in place? |  |  |
| Are safe storage, transport and segregation procedures in place? |  |  |
| Are first aid procedures in place in the event of a minor and major accident? |  |  |
| **Are any of the chemicals Regulation 25 controlled substances (Acrolein, Arsenic, Chloropicrin, Inorganic Cyanide, Cyanogen, DDT, Fluoroacetamide Fluoroacetic acid, Hydrocyanic acid, Methyl bromide, Mirex, Sodium fluoroacetate, Strychnine and /or Thallium)? If YES, the substance must be kept in a locked container in the work area and a register of use must be kept.** |  |  |
| Are any of the chemicals restricted or prohibited carcinogens (Prohibited and Restricted Carcinogens in Appendix C of the [Code of Practice, *Managing Risks of Hazardous Chemicals in the Workplace*](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.safeworkaustralia.gov.au%2Fsites%2Fdefault%2Ffiles%2F2023-0)*)*? (If using a restricted or prohibited carcinogen, the worker will need to register with the WHS Unit and health surveillance may be required). |  |  |
| Are any of the chemicals energetic materials (explosives)? If YES, a permit to acquire/possess will be required |  |  |
| Are any of the chemicals radioactive, if YES please ensure all workers handling the substance are registered with the WHS Unit and that a radiation licence is obtained where applicable |  |  |
| Are there any chemicals of security concern (listed in Appendix A of the *National Code of Practice for Chemicals of Security Concern)?* |  |  |
| Are appropriate record keeping and secure storage facilities in place for controlled substances, chemicals of security concern, energetic or radioactive materials? |  |  |
| Is specific training required for the use of any chemical (E.g. inorganic cyanide, HF, cytotoxic, radioactive materials etc.), if YES, ensure training is conducted before the use of the chemical |  |  |
| Does any chemical have a Chemwatch Hazard Rating of 4 for toxicity, reactivity or chronic, if YES, as a minimum ensure all controls listed in “recommended in SDS” in section 5 are implemented prior to use. |  |  |
| Is any chemical a dry nanomaterial, if YES, ensure all controls listed in “recommended in SDS” in section 5 are implemented prior to use |  |  |

|  |
| --- |
| **Section 3 IDENTIFICATION AND ANALYSIS OF THE HAZARDS** |
| **OBTAIN INFORMATION ON THE CHEMICAL/S TO BE ASSESSED AND IDENTIFY AND ANALYSE THE HAZARDS AND HEALTH EFFECTS** |

What types of hazards are associated and what health effects may the chemicals cause?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Irritant |  | Carcinogenic |  | Explosive |
|  | Corrosive |  | Mutagenic |  | Flammable |
|  | Sensitizing agent |  | Teratogenic |  | Spontaneous reactivity |
|  | Asphyxiant |  | Cytotoxic |  | Water reactivity |
|  | Toxic |  |  |  | Oxidiser |
|  |  |  |  |  | Cryogenic |
|  |  |  |  |  | Other dangerous reactions |

If the chemical is toxic-what is the site of the toxic action? (refer SDS-Toxicological Information)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Local (one area) |  | Systemic (multiple organs/systems) |  | Local & systemic |

If systemic, what are the target organs?

|  |  |  |  |
| --- | --- | --- | --- |
|  | Liver |  | Blood forming tissues |
|  | Kidneys |  | Central nervous system (CNS) |
|  | Lungs |  | Cardiovascular system (CVS) |
|  | Blood |  |  |

What type of toxic effects does the substance/s have?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Acute (immediate) |  | Chronic (long-term) |  | Acute & chronic |

What are the potential routes of exposure?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Inhalation |  | Skin absorption |  | Injection |
|  | Ingestion |  | Eye |  | Other: Type here |

|  |
| --- |
| **Section 4 ASSESSING THE DEGREE OF EXPOSURE TO THE CHEMICAL/S** |

# EVALUATE THE DEGREE OF EXPOSURE

It is wise to limit your exposure to any hazardous chemical by keeping the amount of chemical used and the duration of exposure to a minimum. The following section determines the amount of chemical that will be used over a certain time period and a value estimating the exposure from low to high is then calculated

# AMOUNT OF CHEMICAL USED

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | VOLUME | QUANTITY |  | VOLUME | QUANTITY |
|  | 0-9 ml: | 0-9g |  | 1-4 litres: | 1kg-4kg |
|  | 10-49 ml: | 10-49g |  | 5-10 litres: | 5kg-10kg |
|  | 50-99 ml: | 50-99g |  | >10 litres: | >10kg |
|  | 100-999 ml: | 100g-999g |  |  |  |

**CALCULATE PERCENTAGE OF EXPOSURE VALUE TO ABOVE AMOUNT**

NUMBER OF TIMES; how frequently would employees or others be exposed to the substance/s?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | once |  | six times |  | eleven times |
|  | twice |  | seven times |  | twelve times |
|  | three times |  | eight times |  | specify if greater than twelve: |
|  | four times |  | nine times |  | Click or tap here to enter text. |
|  | five times |  | ten times |  |  |

DURATION: what is the expected duration of each exposure to the substance/s in hours?

TIME PERIOD: amount of time employees or others will be exposed to the substance/s if used daily, weekly, monthly or yearly (daily use is assumed to be 8 working hours).

|  |  |  |  |
| --- | --- | --- | --- |
|  | (8 hours) - if substance/s used daily |  | (160 hours) - if substance/s used monthly |
|  | (40 hours) - if substance/s used weekly |  | (1920 hours) - if substance/s used yearly |

Complete the equation below depending on what you answered for the TIME PERIOD above.

NUMBER OF TIMES x DURATION (in hours) x 100 = % of Exposure (in hours)

TIME PERIOD (in hours)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **If used daily**: | Type No. of times | x | Type duration | x 100 = | Type exposure **%** |
|  |  | 8 |  |  |  |
| **If used weekly**: | Type No. of times | x | Type duration | x 100 = | Type exposure **%** |
|  |  | 40 |  |  |  |
| **If used monthly**: | Type No. of times | x | Type duration | x 100 = | Type exposure **%** |
|  |  | 160 |  |  |  |
| **If used yearly:** | Type No. of times | x | Type duration | x 100 = | Type exposure **%** |
|  |  | 1920 |  |  |  |

Tick the box that corresponds to the percentage of exposure value calculated above: Note the risk below only applies to exposure level – not the overall risk of the entire process

|  |  |
| --- | --- |
|  | (1) Low: <20% |
|  | (2) Moderate: 20-60% |
|  | (3) High: >60% |

**Section 5 CONTROL MEASURE ANALYSIS**

Considering the task/procedure, nature and usage of substance/s, potential adverse health effects and degree of exposure, determine what control measures must be implemented to minimize the risk of harm to health and safety.

NOTE: when considering control measures to minimize the risk of harm, use the Hierarchy of Controls below as a guide and consider using all controls recommended in the SDS for all substances

# HIERARCHY OF CONTROLS

**ELIMINATE:-** remove the substance from the task/procedure entirely

**SUBSTITUTE:-** replace a harmful substance with a less harmful one or minimize the quantities

**ISOLATE:-** separate personnel from the process by distance or barriers

**ENGINEERING:-** use machinery, equipment or processes to minimize workplace contamination

**ADMINISTRATION:-** use policies, procedures, instructions or signage

**PERSONAL PROTECTIVE EQUIPMENT:-** provide and wear equipment/clothing to provide protection

|  |  |  |
| --- | --- | --- |
|  | **ALREADY IN WORK AREA** | **RECOMMENDED IN SDS** |
| Air conditioning |  |  |
| Extraction fans |  |  |
| Exhaust ventilation systems |  |  |
| Fume cupboards |  |  |
| Enclosures to reduce dusts or fumes |  |  |
| Engineering controls |  |  |
| e.g. isolation of the process |  |  |
| Enclosure of the process |  |  |
| Containers to reduce solvent evaporation |  |  |
| Written safe work/handling procedures |  |  |
| Written emergency procedures |  |  |
| Training of workers in these procedures |  |  |
| Good housekeeping practices |  |  |
| Good personal hygiene practices |  |  |
| Personal protective equipment (PPE)   * Specify type * Filter cartridge detail type * Filter cartridge detail life |  |  |
| Eye protection e.g. goggles (Refer to AS 1336 and 1337) |  |  |
| Hearing protection devices e.g soft plugs, hard plugs, ear muffs (Refer to AS 1269 and 1270) |  |  |
| Gloves (Refer to AS 2161, 4011 and 4179)   * Long * Short * State type, eg. Nitrile, Rubber |  |  |
| Other protective clothing (Refer to SAA HB9)   * Lab coat * Apron * Polypropylene overalls |  |  |
| Other specify: Click or tap here to enter text. |  |  |

**Section 6 ASSESSING THE OVERALL RISKS**

Considering the task/procedure, nature and usage of substance/s, potential adverse health effects, likelihood and degree of exposure and current control measures implemented, assess the risk of harm to health and safety.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Process (e.g. during preparation, reaction and clean up) | Hazards | Controls | Exposure (L, M or H) from section 4 | Residual Risk Rating |
| Type text here | Type text here | Type text here | Choose | Choose |
| Type text here | Type text here | Type text here | Choose | Choose |
| Type text here | Type text here | Type text here | Choose | Choose |
| Type text here | Type text here | Type text here | Choose | Choose |
| Type text here | Type text here | Type text here | Choose | Choose |
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| Type text here | Type text here | Type text here | Choose | Choose |
| Type text here | Type text here | Type text here | Choose | Choose |

*Copy and paste subsequent rows as required to keep the lists and date fields.*

MAXIMUM RISK SCORE Choose an item. (if above Medium-review Sections 4 and 5)

If Low or Low/Medium, the risk assessment is complete

|  |  |
| --- | --- |
| **This assessment is to be reviewed immediately if any of the following occur:** | |
| * **Exposure standard is revised** * **Control measures are modified** * **Monitoring or surveillance** | * **There is a significant change in the process** * **New information becomes available** * **Work related illness, accident or incidents indicate a loss of control** |

Completion of this documented process by the person responsible for the work is prerequisite for continuation of the project. A hard copy of this document must be stored for five years, or until replaced by revised document.

***To sign this document using Adobe Acrobat Pro DC, select Tools>Certificates and click Digitally Sign (from the top ribbon). Follow the instructions and save as a new document-repeat the process for additional signatures.***

***If signed document cannot be edited-select File>Save-As and save with a new filename.***

|  |  |  |
| --- | --- | --- |
| ASSESSOR**:** | Click or tap here to enter text. | I confirm that I have endeavoured to complete this risk assessment in a conscientious and diligent manner. |

|  |  |  |  |
| --- | --- | --- | --- |
| SIGNATURE**:** | Click or tap here to enter text. | DATE: | Click or tap to enter a date. |

|  |  |  |
| --- | --- | --- |
| SUPERVISOR**:** | Click or tap here to enter text. | I confirm that this risk assessment accurately represents the subject activity / process. |

|  |  |  |  |
| --- | --- | --- | --- |
| SIGNATURE**:** | Click or tap here to enter text. | DATE: | Click or tap to enter a date. |

## **Section 6 - HOW TO ASSESS THE RISK**

|  |  |  |  |
| --- | --- | --- | --- |
| **Step A - Consider the consequences** | | **Step B - Consider the likelihood** | |
| For each hazard, consider the consequences if something happens. Consider what could reasonably have happened, as well as what actually happened (if there was an accident/ incident). Look at the descriptions below and choose the most suitable consequence below. | | How likely is it that something will happen as a result of the hazard?  Choose the most suitable likelihood below. | |
| **Consequence** | **Description** | **Likelihood** | **Description** |
| Catastrophic | May cause death, or  permanent disability, and/or permanent ill health | Very likely | Expected to occur in most  circumstances |
| Major | Severe injury or illness | Likely | Will probably occur in most  circumstances |
| Minor | Minor (usually reversible) injury  or illness resulting in days off work | Possible | Might occur occasionally |
| First Aid | First aid level medical  treatment | Unlikely | Could happen at some time |
| Negligible | No treatment required | Highly  unlikely | May happen only in exceptional  circumstances |

**Step C – Calculate the Risk Level**

1. Take the Consequence rating and select the correct line in the matrix below.
2. Take the Likelihood rating and select the correct column in the matrix below.
3. Circle the risk level where the two ratings intersect in the matrix below.

Risk level = Click or tap here to enter text.

# Risk Matrix

|  |  |  |
| --- | --- | --- |
| **Prioritising Hazards** | | |
| **Risk Level** | **Priority** | **Action** |
| **Extreme** | 1 | \* Do not proceed with task/activity until corrective actions have been implemented, reviewed and approved by the relevant Vice-President and Executive Dean of College or Portfolio Head.   * Control measures must be implemented to reduce the risk as low as possible. |
| **High** | 2 | \* Do not proceed with task/activity until corrective action has been implemented, reviewed and approved by the relevant Vice-President and Executive Dean of College or Portfolio Head.  \* Implement control measures to reduce the risk as low as possible. |
| **Medium** | 3 | \* Notify supervisor/manager and assess activity.  \* Implement control measures to reduce the risk as low as possible. |
| **Low** | 4 | \* Implement control measures. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Consequence** | **Likelihood** | | | | |
| **Very likely** | **Likely** | **Possible** | **Unlikely** | **Highly**  **unlikely** |
| **Catastrophic** | Extreme | High | High | High | Medium |
| **Major injury** | High | High | High | Medium | Medium |
| **Minor injury** | High | Medium | Medium | Medium | Medium |
| **First aid** | Medium | Medium | Medium | Low | Low |
| **Negligible** | Medium | Medium | Low | Low | Low |

|  |  |
| --- | --- |
| **Control Hierarchy** | |
| Elimination | *Remove hazard* |
| Substitution | *Use a less hazardous alternative* |
| Isolation | *Eg Restrict access, use in a closed container, fume cabinet* |
| Engineering | *Eg Trolleys to move loads, guards on machinery, fume cupboard* |
| Administration | *Eg Training, Safe Work Procedure, signage* |
| PPE - Personal Protective Equipment | *Eg Gloves, respirator, safety glasses* |

See [WHS Risk Management Procedure](https://www.flinders.edu.au/content/dam/documents/staff/policies/health-safety/whs-risk-management-procedures.pdf) for further details