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| --- | --- |
| C:\Users\susanb\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\PRIMARY_A_Vertical_Housed_RGB.PNG | health & safetyrisk register(Example of a risk register for laboratory chemical-based activities) |

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| For use in conjunction with the [Health & Safety: Risk management requirements](https://safety.unimelb.edu.au/__data/assets/pdf_file/0009/4708161/health-and-safety-risk-management-requirements.pdf)*.* For more information, refer to <https://safety.unimelb.edu.au/safety-topics/management-systems/implement>. |

| Activity | Associated Hazards/Risks | Inherent Risk Analysis | Inherent Risk Rating | Legislation/Standards/ Guidance | University Policies and Requirements | Controls | Residual Risk Rating |
| --- | --- | --- | --- | --- | --- | --- | --- |
| L | C |
| Receipt of chemicals into the laboratory | Unknown chemical properties and safe handling/storage requirementsHandling and managing toxic/dangerous chemicalsChemicals that require special permits, licensing requirements and so onInadequate and/or unavailable storage facilitiesChemicals delivered to wrong area or an area not appropriately set up for receipt of chemicalsTemporary storage are inappropriate location/facilitiesDamaged packaging:* physical exposure
* fume
* spills and leaks
 | Unlikely | Moderate | Medium | * *Occupational Health and Safety Act 2004* (Vic)
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.1 Hazardous Substances and Materials
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.2 Scheduled Carcinogenic Substances
* *Dangerous Goods Act 1985* (Vic)
* *Dangerous Goods (Storage and Handling) Regulations* 2012 (Vic)
* *Drugs Poisons and Controlled Substances Regulations 2017* (Vic)
* *Drugs Poisons and Controlled Substances (Precursor Chemicals) Regulations 2007* (Vic)
* *Drugs Poisons and Controlled Substances (Volatile Substances) Regulations 2007* (Vic)
* *Therapeutic Goods Act 2010* (Vic)
* AS 2243.2 Safety in Laboratories. Part 2: Chemical aspects
* AS 2243.10 Safety in Laboratories. Part 10: Storage of Chemicals
 | * *Health & Safety: Chemical requirements*
* *Health & Safety: Personal protective equipment requirements*
* *Health & Safety: Risk management requirements*
 | * SDS obtained prior to purchase/order of chemical(s)
* Risk assessment of area where chemicals are delivered
* Training provided for workers who receive chemical deliveries
* ERMS/Chemical risk assessments
* Rationalising chemical supplies to ensure:
	+ ordering minimum quantities
	+ compatibility of chemicals
	+ adequate storage facilities and space available
	+ all required signage and PPE is available
* Substituting less toxic chemicals where possible
* Use of purpose built chemical cupboards
* Bunded storage areas
* Chemical training for workers
* Chemicals listed on a manifest such as in GoldFFX
* Use personal protective equipment as described in the SDS
* Local induction and emergency training
* Emergency procedures in place
* Spill kits available
* First aid kits
* Trained first aiders
 | Low |
| Storage of chemicals | Incompatible chemicals stored together leading to fire and or explosionIncreased risk of unsafe atmosphere where gas cylinders are stored insideDamaged, removed, or incorrect labelsDamaged containersChemicals stored in inappropriate areas. For example, corrosive chemicals stored under a sink and not a purpose built corrosives lockerToxic fumesChemical spills and leaksManual handling hazards associated with large heavy containers of chemicalTime sensitive chemicals – properties of chemicals alter, can become unstable | Unlikely | Moderate | Medium | * *Occupational Health and Safety Act 2004* (Vic)
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.1 Hazardous Substances and Materials
* *Dangerous Goods Act 1985* (Vic)
* *Dangerous Goods (Storage and Handling) Regulations 2012* (Vic)
* AS 2243.10 Safety in Laboratories. Part 10: Storage of Chemicals
 | * *Health & Safety: Chemical requirements*
* *Health & Safety: Personal protective equipment requirements*
* *Health & Safety: Risk management requirements*
 | * Risk assessments to determine appropriate storage arrangements and packaging requirements
* Use of chemical lockers:
	+ corrosives locker
	+ poisons locker
* All gas cylinders not in use stored in purpose built areas
* Gas cylinders stored in storage areas – stored in minimum quantities with atmospheric monitoring
* Gas cylinders secured
* All chemicals stored in drip trays and/or bunded areas
* Where ever possible chemicals stored in their original containers/packaging. Where this is not appropriate a risk assessment is undertaken to ensure correct packaging and labelling
* Hazchem signage where required
* Chemicals in small sized containers to reduce weight
* Time sensitive chemicals dated and monitored through scheduled workplace inspections
* Use lifting aids and trolleys for larger items
* Use personal protective equipment described in the SDS
* Training for workers responsible for storing and accessing chemicals
* Access to chemical storage restricted to authorised workers only
* Local induction and emergency training
* Emergency procedures in place
* Spill kits available
* First aid kits
* Trained first aiders
 | Low |
| Using and handling chemicals | Incompatible chemicals mixed together:* fire
* explosion
* release of toxic fumes

Creating unknown new chemicalsIncreased risk of unsafe atmosphere where gas cylinders are usedDamaged, removed, or incorrect labelsChemicals used in inappropriate containersChemicals used in inappropriate areasToxic fumes and leakage from chemical experimentsFire and explosion during decantingPhysical contact with a chemicalManual handling hazards associated with large heavy containers of chemicalManual handling injuries from moving and setting up gas cylinders | Possible | Severe | **Extreme** | * *Occupational Health and Safety Act 2004* (Vic)
* *Occupational Health and Safety Regulations 2017* (Vic) Part 3.1 Manual Handling
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.1 Hazardous Substances and Materials
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.2 Scheduled Carcinogenic Substances
* *Dangerous Goods Act 1985* (Vic)
* *Dangerous Goods (Storage and Handling) Regulations 2012* (Vic)
* AS 2243.2 Safety in Laboratories. Part 2: Chemical aspects
 | * *Health & Safety: Chemical requirements*
* *Health & Safety: Personal protective equipment requirements*
* *Health & Safety: Risk management requirements*
 | * Risk assessments to determine chemical properties and appropriate handling arrangements
* Compatible equipment used with chemicals
* Fume cupboards
* Gas cylinders secured
* Chemicals in small sized containers to reduce weight
* Chemicals labeled
* Use lifting aids and trolleys for larger items
* Use personal protective equipment described in the SDS
* Training for workers using chemicals
* Access to chemical storage restricted to authorised workers only
* Adequate supervision with regards to level of training and experience
* Cylinder trolleys
* Manual handling training for gas cylinders
* Local induction and emergency training
* Emergency procedures in place
* Spill kits available
* First aid kits
* Trained first aiders
 | Medium |
| Using a pipette | Repetitive motion of handsLong duration of activityContamination | Possible | Moderate | Medium | * *Occupational Health and Safety Act 2004* (Vic)
* *Occupational Health and Safety Regulations 2017* (Vic) Part 3.1 Hazardous Manual Handling
 | * *Health & Safety: Hazardous manual handling requirements*
* *Health & Safety: Risk management requirements*
 | * ERMS/Hazardous manual handling risk assessment
* Where ever possible use:
	+ multipipette to reduce repetitive motions
	+ electronic assisted pipettes
	+ pipettes with ergonomic design
* Use PPE
 | Low |
| Using a fume cupboard | Fume cupboard not appropriate for laboratory useContamination to atmosphere either outside environment or within laboratoryPower failure or other failure (e.g., mechanical) of cupboardUsing fume cupboard for storing chemicals not in use | Rare | Major | Medium | * *Occupational Health and Safety Act 2004* (Vic)
* AS 2243.8 Safety in Laboratories. Part 8: Fume Cupboards
 | * *Health & Safety: Chemical requirements*
* *Health & Safety: Risk management requirements*
* *Health & Safety: Regulated plant requirements*
 | * Risk assessment to determine type of fume cupboard:
	+ bench-type
	+ recirculating cupboard
	+ walk-in cupboard
* Scheduled maintenance and inspection
* Alarmed and procedures in place where cupboard “fails”
* Good housekeeping and cleaning procedures
* Use PPE
* Filter systems and appropriate extraction
* Chemicals not stored in fume cupboards and controls adopted for storage of chemicals (see above)
 | Low |
| Disposal of chemicals | Damaged, removed or incorrect labelsChemicals stored in inappropriate containersUncontrolled access to chemical wastesManual handling injuries from large containers | Possible | Major | **High** | * *Occupational Health and Safety Act 200*4 (Vic)
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.1 Hazardous Substances and Materials
* *Occupational Health and Safety Regulations 2017* (Vic) Part 4.2 Scheduled Carcinogenic Substances
* *Dangerous Goods Act 1985* (Vic)
* *Dangerous Goods (Storage and Handling) Regulations 2012* (Vic)
* AS 2243.2 Safety in Laboratories. Part 2: Chemical aspects
 | * *Chemical risk management requirements*
* *Personal protective equipment – Health and safety requirements*
* *Health and safety risk management requirements*
* *Health & Safety: Hazardous waste requirements*
 | * Chemicals labeled and disposed of in appropriate containers
* Removed by EPA licensed contractor
* Risk assessment of area where chemicals are picked up for disposal
* Restricted access where appropriate
* Local induction and emergency training
* Emergency procedures in place
* Spill kits available
* First aid kits
* Trained first aiders
 | Low |
| Handling glassware | Lacerations from broken glassBurns from handling heated glassPoisoning from contaminated glass | Possible | Minor | Medium | * *Occupational Health and safety Act 2004* (Vic)
 | * *Health & Safety: Personal protective equipment requirements*
* *Health & Safety: Risk management requirements*
 | * Worker training in basic use and care of glassware
* Use laboratory glassware
* All glassware checked prior to use
* Processes that may put glass under stress (e.g., vacuum) fully enclosed/guarded
* Heated glass handled according to localised procedures
* Use PPE
* Damaged and broken glass disposed of in designated waste
* First aid kits
* Trained first aiders
 | Low |