

# EVENTS: HEALTH and SAFETY HAZARDOUS CHEMICALS GUIDE



# Table of Contents

Overview..... 3

Responsibilities ..... 4

General Use ..... 5

Specific Hazards ..... 6

Design and Planning.....12

    Safety Data Sheets .....13

Risk Assessments .....14

Labelling and Storage .....15

Hazardous Chemical Register .....16

Training and Competence .....17

Spills and Leakages.....18

First Aid and Emergencies .....19

Review .....20

# Overview

This guide provides information to assist with the use and handling of **hazardous chemicals** in live entertainment and events on behalf of Curtin University. This does not replace the need to implement risk management strategies, undertake research or seek specialist advice. It is recommended that this information is referenced during the planning and delivery of events to assist in identifying hazards, assessing risks and determining appropriate control measures to eliminate and/or minimise these risks, so far as reasonably practicable.

Every person has a responsibility to understand their obligations under Western Australian legislation. Codes of practice, International and Australian Standards also provide further guidance on how to meet work health and safety obligations.

Hazardous chemicals are substances, mixtures and materials that could have an adverse effect on a person's health, safety and the environment. Those at risk may include workers, contractors, visitors, students or members of the public and can occur within or outside the event site.

Exposure to chemical hazards may occur by skin contact, inhalation and absorption or by ingestion. Consequences of exposure may include serious injury, respiratory irritation and damage, burns, skin irritation, eye damage, cancer, poisoning and even death.

# Responsibilities

Western Australian legislation contains specific information in relation to managing the risks to health and safety associated with the use, handling, generation and storage of hazardous chemicals.



This information will need to be passed onto people involved with events to:

- Ensure the labelling, identification, use, handling, storage, transport and disposal of hazardous chemicals, is carried out to ensure that staff/students/contractors and visitors are not exposed to hazards,
- Maintain a chemical register and manifest (where relevant) of hazardous chemicals,
- Ensure that exposure standards are not exceeded,
- Provide information, training, induction, Personal Protective Equipment (PPE) and supervision to workers,
- Provide spill containment system for hazardous chemicals and training in its use if necessary,
- Obtain a current Australian compliant Safety Data Sheet (SDS) from the manufacturer, importer or supplier of the chemical,
- Control ignition sources and accumulation of flammable/combustible substances.
- Provide and make available fire protection, firefighting equipment and emergency and safety equipment

# General Use

For those people involved in an event whose work potentially exposes them to hazardous chemicals, the following should be noted.



- Hazardous chemicals must be kept in the smallest practicable quantities.
- Hazardous chemicals must have a current Australian compliant Safety Data Sheet (SDS) from the manufacturer, importer or supplier of the chemical
- Hazardous chemicals must only be used for the purpose intended and following manufacturer/suppliers instructions.
- Excess chemicals should be removed at the end of the event and either stored appropriately on campus by Curtin event organisers or removed by the exhibitor.
- Event staff must be competent in working with hazardous chemicals. Appropriate and adequate supervision, training and PPE must be provided.
- Event staff must understand the potential of reactions with other chemicals, heat, ignition sources and be competent to identify and use appropriate safe work practices.
- Event staff must wear appropriate PPE and engineering controls must be inspected and maintained.
- Potential ignition sources must not be introduced to the area where there is a possibility of fire or explosion.

# Specific Hazards

**Plastics and Foams** - Whilst convenient and easy to use to create decor for events, plastic and foam products can be highly flammable and may create toxic fumes or dust when ignited, cut or shaped.



Controls include:

- Substitute plastics with less hazardous substances. NOTE: Flame resistant styrene foam is available, however fumes released under heat may remain a risk. Cotton wadding covered in canvas can be a safe alternative,
- Use respiratory devices as recommended by the product manufacturer when cutting or shaping plastics or foams. Different masks are required for different substances so ensure the type of mask is appropriate to the substance in use, for example a particle dust mask may not prevent the inhalation of a toxic gas,
- Use PPE such as safety glasses, overalls and gloves to prevent contact with eyes and skin,
- Store plastics and foams in the smallest practicable quantities away from heat or ignition sources,
- Ensure the appropriate fire extinguisher is on hand.

**Glues and Solvents** - Some glues and solvents are volatile and can be corrosive and/or create toxic fumes. Others require heating. When glue is applied by spray, aerosol or compressed air, airborne particles are released. Strong adhesives, such as *Superglue* will adhere to skin.



Controls include:

- Only use glues and solvents as per manufacturers' recommendations,
- Control access to the area where glues and solvents are being used and stored,
- Provide adequate ventilation and extraction,
- Dispose of tools, brushes, spreading devices appropriately,
- Ensure spill, firefighting and first aid procedures and equipment are in place and understood by all personnel,
- Ensure hot-glue guns are tested and tagged and are correctly mounted on a stand when not in use,
- Ensure skin is protected against dripping hot glue by wearing appropriate protective gloves,
- Have only the smallest practicable quantity of solvents and flammable adhesives required for the event.

**Paints** - Some paint products are volatile and can be corrosive and / or create toxic fumes. When paint is applied by spray, aerosol or compressed air, airborne particles are released.



Controls include:

- Substitute solvent based paints with water based products. Do not use lead based paints,
- Substitute paints that require mixing with pre-mixed products,
- Use PPE (gloves, masks etc.) as recommended by the manufacturer,
- Use paint spraying equipment and aerosol paints as per manufacturers' recommendations that has proper extraction and ventilation,
- Use Control access to areas where solvent based paint is used by bollards, monitoring by staff,
- Do not use solvent based paint where there are potential sources of ignition including lighting instruments, heaters or hot work equipment (Welding & grinding). Do not use heat sources to expedite drying of solvent based paint,
- Ensure spill, firefighting and first aid procedures and equipment are in place and understood by all personnel,
- Have only the smallest practicable quantity of solvent based paint required for the event.



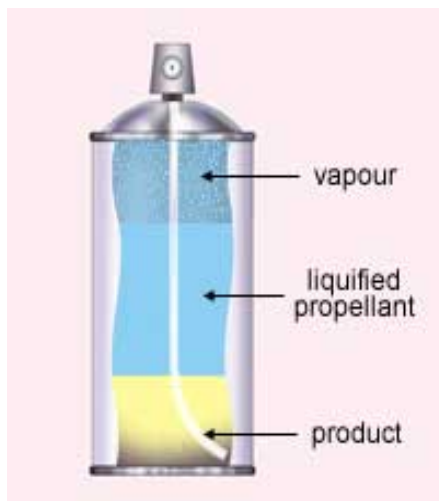
**Timber Products** - Some timber is treated with chemicals against infestation and many products use synthetic bonding agents. Sawdust from any timber product may be a risk to health if inhaled, ingested or absorbed topically by skin contact. It is highly flammable and can be explosive. Free formaldehydes and other harmful volatile organic compounds slowly exit timber based materials in vapour form over long periods. This occurs in greater volumes from manufactured timber products such as particle board, plywood and medium & high density fibreboard (MDF & HDF).



Controls include:

- Use active filtered dust extraction systems when cutting or shaping timber products. Use of a vacuum cleaner adjacent to the cutting tool or connected to the dust outlet of a saw or router is a substitute, though less effective than an installed industrial system,
- Ensure any area where timber is cut or stored, especially soon after cutting, is well ventilated so formaldehyde gasses cannot accumulate,
- Seal cut edges/splits as soon as practicable after cutting manufactured or treated timber products. Paint seals better than wood sealants or finishing oils,
- Regularly clean up accumulations of sawdust. Dampen down sawdust to reduce the risk of it becoming airborne whilst cleaning. Do not use percussive tools, e.g. hammers on nails, which may create sparks, near piles of sawdust,
- Use correct PPE when working with timber products: Goggles, dust mask or respirator mask, overalls, gloves. Continue to use a dust mask when removing and laundering dusty overalls or clothing,
- Avoid cutting timber products on stage or in any area where ventilation is likely to be limited and where more people are likely to be exposed,
- Disposal of any hazardous timber products must also be considered.

**Aerosols** - Aerosols are classified as Class 2.1 and Class 3 Dangerous Goods, and these are usually used for lubrication, adhesives, painting or stain removal.



Contents of aerosol cans are under pressure and may be volatile, toxic or corrosive.

- Only use aerosols as per manufacturers' recommendations,
- Control access to the area where aerosols are being used and stored,
- Provide adequate ventilation and extraction,
- Dispose of empty aerosol containers carefully. Do not incinerate or puncture,
- Ensure firefighting and first aid procedures and equipment are in place and understood by all personnel,
- Use PPE to prevent inhalation and skin contact of aerosol packaged products,
- Do not use or store aerosols near sources of heat or ignition.

**Gas Products** - A few gas products are used in events and entertainment. These include Liquid Petroleum Gas (LPG) for propulsion of plant, Carbon Dioxide (CO<sub>2</sub>) for smoke and haze effects, Oxygen and Acetylene gas for metal cutting and welding, helium and compressed air for various uses. Carbon Monoxide (CO) is released when operating internal combustion engines. Use of some of these gases is heavily regulated due to their explosive and volatile nature, e.g. explosion, fire, asphyxiation, toxicity or propulsion of objects.



Controls include:

- Substitute with less hazardous products; consider an alcohol based gel product for flame effects over LPG, propane or butane,
- Store gasses according to segregation requirements as per legislation,
- Store and use the smallest practicable quantities,
- Do not use or store flammable gasses near sources of heat or ignition,
- Ensure that there is sufficient ventilation when using gas products,
- For volatile gasses, such as Acetylene and LPG, fit a gas arrestor correctly to the regulator,
- Ensure that all valves are turned off when gas is not in use.

# Design and Planning

Plans for the delivery stages of an event (bump in, rehearsal, show and bump out etc.) should be implemented prior to the event.



The following activities should be addressed:

- Consultation with relevant stakeholders and workers,
- Site specific inductions and training,
- Chemical register,
- Appropriate PPE and emergency procedures are effective and available,
- Equipment inspection and/or maintenance,
- Implement and monitor controls identified in risk assessments or SWP,
- Compliance to legislative requirements,
- Review, consult and adjust control measures as required on campus,
- Incident reporting and management,
- Hazardous waste management,
- Sign-off and handover procedures,
- Correct handling and storage of gas bottles and hazardous chemicals
- Inspect area for ignition sources.

# Safety Data Sheets

A Safety Data Sheet (SDS), is a document that provides information on the properties of substances and how they affect health and safety in the workplace.



For example, an SDS includes information on:

- the identity of the chemical,
- health and physicochemical hazards,
- flammability properties,
- safe handling and storage procedures,
- emergency procedures,
- disposal considerations,
- PPE,
- Contact Health and Safety for further assistance.

# Risk Assessments

A risk assessment should be undertaken prior to a hazardous chemical being used in an event held on or off campus.



Risk assessments must take into account the particular environment in which the hazardous chemical is being used.

For example, compounding problems can occur if people are exposed to high levels of helium gas, this displaces air in the lungs and can quickly cause loss of consciousness.

Contact Health and Safety for further assistance.

# Labelling and Storage

Hazardous chemicals must be labelled as per the requirements specified in Labelling of Workplace Hazardous Chemicals Code of Practice. This also includes decanted chemicals.



- Always store chemicals in the original container provided by the manufacturer with the legible label firmly affixed,
- Never pack or decant a hazardous chemical into a container that would usually contain food or beverages or may be mistaken for containing food or beverages,
- Keep storage containers tightly closed to avoid spills and leaks,
- Store chemicals so that they do not become unstable,
- Ensure that chemicals are stored away from food/food storage containers,
- Isolate chemicals from one another according to their potential combination dangers,
- Restrict access to chemicals to those competent in working with hazardous chemicals.

# Hazardous Chemical Register

A Hazardous Chemical Register is to be made readily accessible to all persons involved with an event in the use, storage, handling and disposal of hazardous chemicals and to anyone likely to be affected by a chemical exposure during an event.

- Printed copies be made available if workers or contractors are not able to easily access a computer for electronic copies,
- Information on the location and quantities of flammable goods stored, to be available at the location of the Fire Control Panel or Emergency Control Point on temporary sites. e.g. flammable liquids and gases,
- Contact Health and Safety for further assistance.





# Training and Competence

Appropriate induction, training and supervision must be provided for those people involved in an event whose work potentially exposes them to hazardous chemicals.

Personnel must:

- be competent in the safe handling and use of hazardous chemicals,
- be able to understand a SDS,
- follow a Safe Work Procedure (SWP) or Risk Assessment,
- be able to contain spills,
- be able to follow Curtin's emergency procedures and
- be able to competently use PPE.



# Spills and Leakages

A spill containment system is required where there is a risk of a spill in any part of the event area. It must allow for how to clean up, contain and dispose of the spill or leak. The provision of spill kits and emergency procedures is necessary to effectively manage the risk. Ensure spill kits are suitable for the chemicals being used.



1. Evacuate the area and call Curtin Safety Communities on Ext 4444 for help immediately,
2. Protect yourself
3. Ventilate the area,
4. Notify the event organiser,
5. If possible, contain the spill using the appropriate spill kit,
6. Block floor drains, if present, to prevent the spill from spreading further,
7. Report any spills on the [Curtin Incident Management](#) System.

# First Aid and Emergencies

An effective emergency plan by the event organiser/s requires that emergency equipment is always available for hazardous chemical spills or exposures



Examples of controls include:

- Provide absorbent material in a spill kit that is suitable for the chemical likely to be spilled e.g. neutralising agents such as lime and soda ash, booms, plates and/or flexible sheeting for preventing spillage from entering drains and waterways
- Provide appropriate types of firefighting equipment. Ensure personnel are trained and competent in its use,
- Provide suitable first aid kits,
- Have accessible emergency showers and eye wash stations (if necessary),
- Provide mops, buckets, squeegees and bins for clean-up,
- Provide suitable protective clothing and equipment for personnel involved in the clean-up.

# Review

An after-event review is a “learning from experience process” that gives everyone involved in the event, an opportunity to systematically analyse the various actions that they selected to perform a particular task, to determine which of them was wrong or not necessary, which should be corrected and which should be reinforced.

After an event, the following criteria should be reviewed in consultation with relevant parties:

- Incident reports and outcomes including near-misses,
- Effectiveness of the control measures,
- Areas for improvement,
- Occasions of non-compliance,
- Any new hazards or risks identified,
- How chemical waste was correctly handled and disposed of.



REVISION HISTORY		
Revision #	Date	Amendment Description
1	24/05/2016	New Document
2	09/12/2019	Full review