Information Sheet: Fume Cupboards

Purpose

The purpose of this information sheet is to provide general guidance and information to workers and supervisors on the use of fume cupboards to meet the requirements of the Chemical Safety Management handbook chapter.

Note: For the purpose of this information sheet, fume hoods and cabinets have the same meaning as fume cupboards.

Q1 When do I need to use a fume cupboard?

Fume cupboard use is required when any activity has the potential to create airborne hazards from chemical fumes or harmful substances. Fume cupboards are engineered and tested to provide adequate protection against airborne/vapour hazards for most processes, if they are used correctly.

A fume cupboard should also be used when a safety data sheet identifies ventilation is required. Conducting a risk assessment in accordance with the Hazard Management handbook chapter will help identify whether the use of a fume cupboard is an effective control in reducing the residual risk of an activity.

Q2 How do I determine which type of fume cupboard I should use?

Consider the activity that you are undertaking and decide which of the following types of fume cupboards is the most appropriate:

- Floor mounted (walk-in) fume cupboards are used for large scale work, requiring more space for set up of apparatus or large volumes of volatile chemicals that cannot be performed in a bench top fume cupboard.
- Bench mounted fume cupboards are used for smaller scale, bench top activities that allow work to be enclosed by pulling down a vertically sliding sash on the front of the fume cupboard. These can be fitted with scrubbers or traps for particular chemical fumes where required by a safety data sheet (SDS). There are different types of bench mounted fume cupboards, including:
  - Downdraft fume cupboards are used when an activity generates fumes that are heavier than air.
  - Variable air volume fume cupboards maintain a constant face velocity irrespective of the sash position. This reduces the volume of conditioned air that is exhausted through the fume cupboard.
  - A bypass fume cupboard provides continuous air flow across the work surface even when the sash is closed and a relatively constant air volume regardless of sash position.

Q3 If a fume cupboard is required what do I need to consider before I start?

- Confirm adequate cupboard performance before use.
- Ensure that before using a fume cupboard it is within test date (within 12 months on the compliance test label - contact Facilities Management if out of date) and is switched on.
- The compliance test label should state that the cupboard has passed the test meaning it is working correctly or failed the test. In the event that a label states that the cupboard has failed, it should not be used until it is safe to do so (contact Facilities Management to obtain details on why it failed and to confirm a work order for repairs has been raised)

Continued

Q3 If a fume cupboard is required what do I need to consider before I start? (Continued)

- Risk assess the activity that is to be carried out in the fume cupboard in accordance with the Hazard Management handbook chapter.
- As a rule of thumb, use a fume cupboard or other local ventilation device when working with any considerably volatile substance with a Threshold Limit Value (TLV) of less than 50 ppm (information can be obtained from the SDS).
- Recognise the cupboard's limitations - use specialised cupboards for radioactive materials, perchloric acid, hydrofluoric acid and biohazards as these may require special features or scrubbing.
- Do not start work until the pre-use cycle is complete.
- Do not use a fume cupboard that fails its pre-use purge or is in alarm.

Q4 If a fume cupboard is required what do I need to consider while carrying out the activity?

- Ensure that there is enough space to conduct work safely. Fume cupboards are for worker protection, not for general storage. Uncluttered cupboards are more effective.
- Keep liquid chemicals bunded to contain spills. Ensure that all chemicals not required are removed from the fume cupboard and place in appropriate storage.
- Keep fume cupboards free of ignition sources (e.g. Bunsen burners) if flammable solvents are being used.
- Work at least 15 cm inside the fume cupboards and do not block baffles or slots at the back as the air distribution can become uneven or unsafe. Position items in the centre and towards the back of the fume cupboard to prevent turbulence.
- In the case of walk in fume cupboards, do not stand inside fume cupboard while experiment is in progress.
- Large pieces of equipment reduce air movement; ensure a large air gap around equipment is maintained. Larger items should be raised to allow for airflow beneath, to prevent eddies. If you are frequently using equipment in a fume cupboard contact Facilities Management so that the maintenance contractors can map the most efficient place for your equipment at the next testing visit.
- Minimise traffic past the fume cupboard as this can cause turbulence. Open windows can cause drafts. Turbulence and drafts can cause fumes to escape the cupboard.
- Keep sash as low as practicable when the process is in operation, except when adjustments within the cupboard are being made.
- Leave the airflow on when it is not in active use only if toxic substances are left in it or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is off. In the latter case, place a sign on the fume cupboard indicating that it is to be left on and the nature of the hazardous chemicals contained within.
- Ensure that fume cupboards are clean and free from contaminants on completion of task.
- Turn off fume cupboard and allow it to complete the 20 minute post-purge cycle.

Q5 What do I need to consider when commissioning a new fume cupboard for my laboratory?

For guidance for workers and supervisors purchasing and commissioning new fume cupboards, please consult the Plant/Equipment safety management – Acquisition, installation and commissioning FAQs.

Q6 Do fume cupboards require routine maintenance and testing?

Yes. A periodic inspection, testing and maintenance program is mandatory in accordance with AS/NZS 2243.8:2014 "Safety in laboratories, Part 8: Fume cupboards" and must be completed by a competent person at 6 and 12 monthly intervals. Testing is arranged by Infrastructure and test records available for staff on the Infrastructure website.

In order for this inspection and testing to occur, all maintenance workers need to be made aware of the hazardous nature of reagents and equipment contained in the area during their induction to the laboratory. Maintenance workers should notify the supervisor/person in control of the activity or area when testing is to be carried out. Decontamination of the fume cupboard should be performed by the supervisor/person in control of the activity or area before maintenance is performed.

Q7 Does the cost of maintenance of fume cupboards come out of my project funds?

No. Fume cupboard maintenance is managed by Infrastructure and funded by the Infrastructure operational budget.

Q8 Can I modify a fume cupboard to suit my activity?

No. Using a fume cupboard in a way that was not intended can affect the effectiveness and efficiency of its function and lead to exposure of fumes. If you require changes to be made to a fume cupboard, please contact Infrastructure facilities support to initiate a service request.

Q9 How do I obtain further information on fume cupboard use?

Refer to AS/NZS 2243:8:2014 "Safety in Laboratories Part 8: Fume Cupboards"

For further information, please contact a member of the HSW Team.