



LOCATION DETAILS

School/Branch: School of Molecular & Biomedical Science

SAFE OPERATING PROCEDURE DETAILS

Using Fume Hoods in Research laboratories.

Date Prepared: 07/04/2007

Review Date: 14/05/2010

PREPARED BY: Name, position, & Signature (insert names of supervisor, HSO, subject matter expert)

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Signature:

RISK ASSESSMENT

Has a risk assessment been completed and all other environmental considerations been made?
YES

See risk assessment dated:
10/08/2009

Risk Rating:
Low
Medium
High
Very High

RISKS IDENTIFIED

- Illness/affects from exposure to chemicals/biological agents
- Manual handling injuries from repeated movement in the cabinet
- Fire/explosion from using flammable goods inside the fume hood
- Electric shock from electrical components of fume hood
- Fume hood sash left open and blockage of airflow which allows the escape of the fumes from toxic and noxious material. The probability of injury is slight to moderate and may increase with the toxicity of the escaping material.
- From the apparatus itself, *i.e.* fan not functioning or broken sash. The probability is slight but damage could range from moderate to severe.

SAFETY PRECAUTIONS

The following control measures **MUST** be adhered to:

- **DO NOT** exceed the storage limitations for liquids in the fume hood
- Informal training must be completed before the fume hoods can be used without supervision
- Ensure all appropriate PPE is worn while working in the fume hood
- Chemical Training must be completed if working with hazardous/dangerous substances
- Use correct manual handling procedures
- Ensure appropriate labelling/storage and handling of chemical procedures are used at all times

PERSONAL PROTECTIVE EQUIPMENT REQUIRED

The following PPE must be worn at all times:

- Gloves (type depends on substances being used)
- Safety glasses

- Lab coat
- Enclosed shoes (to be worn at all times when in a laboratory environment).

SAFE OPERATING PROCEDURE

FUNCTION & USAGE

A Fume Hood is essentially a ventilated box with one side providing an adjustable opening. It provides air extraction to remove any fumes produced within the box. It is designed to have laminar flow (even and non-turbulent air-flow) through the front opening. To obtain even flow through the face of the fume cupboards, baffles are generally installed at the back of the cupboard. These baffles are set to extract the air from two or more locations across the back of the fume cupboard.

Fume cupboards draw air out of the rooms they are installed in. There needs to be an adequate volume of air available or the fume cupboard will not be able to draw a sufficient volume of air to function properly. Where the room is small or there are a large number of fume cupboards an additional supply of air, other than the normal room ventilation, may be required. This additional air is known as the make-up air. If the make-up air supply is not adequate or the make-up air is switched off then the fume cupboards may not be able to achieve the required face velocity. Alternatively if there is no make-up air and the room ventilation is switched off, there may be insufficient air volumes for the fume cupboards to achieve the required face velocity. This can cause fumes to escape in to the laboratory. The base of the fume cupboard area must be kept clear to allow effective ventilation of the work area.

MAINTENANCE

Regularly maintain the fume cupboard by:

- removing the contents of the cupboard and washing the walls and work bench.
- keeping sinks and drains clear of refuse and checking them regularly.
- labelling all containers in the fume hood appropriately.
- ensuring waste bottles in the fume hood are capped when not in use and are disposed of regularly. Waste reagent containers are to be used *only for those chemicals listed on the outside* of the container – DO NOT PUT ANYTHING ELSE IN THE CONTAINER.

Maintenance of fans must be carried out regularly (twice yearly recommended).

PROCEDURES FOR USING FUME HOODS

1. Before using any fume hood check the compliance sticker to see if it indicates it is safe to use.
2. Perform all work that involves hazardous and noxious materials in the hood. If a fume hood is not set up and used appropriately, fumes may escape out of the sash opening of the hood towards the user, especially with heavier vapours such as formaldehyde or chlorinated solvents.
3. Do not work within 10cm of the leading edge. The larger the item, the further back it needs to be within the fume cupboard to overcome the turbulence created.
4. Work extending arms under or around the sash, placing the head behind the sash, with the glass between the worker and the chemical source. The sash will act as a primary barrier in the event of spill, splash or explosion. Heads must always be kept out of fume hood while working.
5. Put the minimum amount of materials in the hood required for the current operation. Each additional item in the hood creates additional turbulence and potential for gas/vapour escape. Do not place storage items behind the area you are working in.
6. Do not put large equipment in the fume cupboard, as they block the baffles and produce regions of zero or low flow in the work space.
7. Do not open windows which may create draughts in the vicinity of the fume cupboard. The make-up air supply and room ventilation should be on whenever the fume cupboard is in use.

8. Do not use perchloric acid in a standard hood. Use a water-washed hood.
9. Do not use infectious materials in a chemical fume hood.

BEFORE USING A FUME HOOD FOR THE FIRST TIME

Before using a fume cupboard for the first time:

- Check that the flow reading on the test certificate meets or exceeds the flow rate requirement.
- Locate where the fan failure warning alarm is and what it will sound like (if fitted).
- Locate the fire damper or emergency stop (if fitted) for use in the event of a fire.
- Locate the nearest phone, fire extinguisher/blanket, shower or eyewash station and know who and where the qualified first aid providers are.
- Wear protective clothing (laboratory coats and gloves).

HAZARDS ASSOCIATED WITH THE USE OF A FUME HOOD

- While fume hoods are designed to protect the user from hazards, misuse can cause them to afford less protection than expected and, hence, becoming a hazard in their own right.
- The effectiveness of a fume hood is reduced if the sash is open too wide or the hood is cluttered with apparatus.
- Fume hood fans are susceptible to failure leaving them effectively useless.
- The front sash may be made of heavy glass. Accidents have occurred when the sashcord breaks.

OTHER INFORMATION

- All operations that may produce harmful air contaminants of any type, other than microorganisms, must be done in a fume hood.
- All fume hoods are tested yearly.
- No more material than is needed for your task should be placed in the fume hood.
- Always use the minimum amounts of dangerous substances when working in the fume hood.
- Always read the operating manual for each type of fume hood you use.
- Fume hood operating manuals explain how to operate the hood controls and the basics of fume hood use. It is up to the person operating in the fume hood to understand the characteristics of the substances and procedures carried out in the hood, and ensure you have a safe operating procedure for those activities.

Applicable Standards and Regulations

Australian Standard 2243 Safety in Laboratories Part 8 Fume Cupboards

ADMINISTRATION

Note: This Safe Operating Procedure must be reviewed :

- a) after any accident, incident or near miss;
- b) when training new staff;
- c) if adopted by new work group;
- d) if equipment, substances or processes change; or
- e) within 5 years of date of issue.