

Risk Assessment Form

Procedure	Use of Ducted Fume Cupboards
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Name(s) of person performing the work	Users (Lab manager & Lab Technician & Tenants & Licensee's)		
Name & position of assessor	Khwaja Islam & Laboratory Manager	Signature	
Date of assessment	01/10/2018	RA Number	BioE 0012

Outline of procedure / activity:

The variable air volume (VAV) ducted fume cupboards are designed to contain laboratory reactions and fumes emitted there from, and provide safe and compliant release of all contained fumes dust etc. to the atmosphere through air dilution. Along with associated supply air to the laboratories containing the fume cupboards, to maintain negative pressure when fume cupboards are in operation. The fume cupboards are to be designed with a face velocity of **0.4³m/sec** over a 500mm high sash opening in accordance with BS EN 14175. The fume cupboards are to provide a containment factor of at least 0.005ppm using SF6. There are two ducted fume cupboards which are located in the chemistry lab (696.10.23).

Sash:

The sash is fitted with a stop to prevent sash being raised above 500 mm unless released by user. A warning label is fitted to sash to prevent damage. Stop is to reset automatically when sash is lowered below 500 mm.

Automatic Sash Controller:

The sash would be fitted with an automatic sash controller and a motor to enable the sash to be driven up and down. The movement of the sash is controlled via a passive infra-red movement detector which will sense if laboratory staff are immediately in front of the fume cupboard. If no staff are present in front of the fume cupboard the sash will automatically close via the motor operated clutch system. The speed of response of the sash closing mechanism is freely adjustable from 10 seconds to 30 minutes. The sash can also be moved by manual intervention at any time.

Variable Air Volume Controller:

Each fume cupboard would have a TEL AFA1000E programmable VAV controller panel with the following features:

- i) VAV controller c/w digital airflow indicator
- ii) Velocity Sensor c/w low air alarm
- iii) Sash Switch c/w sash high alarm

Firetrace (CO2 based fire suppression system):

Each fume cupboard would have an independent Firetrace system, consisting of the following equipment:

- 1 No. Indirect HIGH pressure CO2 Firetrace System
- 1 No. NO/NC discharge confirmation pressure switch
- 1 No. NO/NC monitoring pressure switch
- 2 No. Diffusers c/w 8mm galvanised steel diffuser tubing

The system is based upon a CO2 extinguisher, suitable for suppressing class A, B & C type fires, as defined in European Standard "Classification of fires" (EN 2:1992, incorporating amendment A1:2004). There is one cylinder provided per fume cupboard, fitted with contacts for interface to the fire alarm system.

Fume Cupboard extract control system:

The following items shall be available within the control system as a minimum:

- Continuous display of airflow performance
- Low airflow visual/audible alarm
- Extract fan On/Off switch
- Light On/Off switch
- BMS volt free relay to be provided for low airflow
- Low airflow alarm automatic inhibit function during setback mode (out of hours)
- The display will show an Alarm icon (with line through it) when the audible alarm is in the Muted condition
- Sash High – will be displayed when the Sash alarm is enabled and the sash is raised above the max safe working opening
- Low Air Alarm / High Air Alarm will be displayed if the alarm points are exceeded:
 - “Night set-back” - will be displayed if the night set-back function is activated
 - “MIN” - will be displayed if the MIN function is activated (when enabled)
 - “NORM” - will be displayed if the Normal function is activated (when enabled)
- The alarm unit will have three LED indicators:
 - Red - Low or High air alarm
 - Amber - Air flow warning, Sash High
 - Green - Air safe
- An audible alarm sounder with local or remote Mute facility

Sash Operations:

1. The fume hood will detect user presence when working at the unit, the black sensor above the sash will go from LED green to LED red.
2. Press the upwards arrow on the VAV controller to raise the sash to 500 mm when it reaches that height the sash will automatically stop.
3. Press the downwards arrow on the VAV controller to close the sash after work has been completed.
4. Press III button on the VAV controller to VAV run mode.

Chemical storage cabinet:

- Storage of acids (acid and base kept separate).

Flammable storage cabinet:

- 90 mins fire resistant.
- Cabinet labelled to identify hazard in accordance with COSHH Regulations.

Before you Start:

The following basic principles should always be followed when using a fume cupboard:

- **ALWAYS** refer to the COSHH Assessment to make sure you understand any chemical or biological hazards associated with the sample before working with it.
- **CHECK** the fume cupboard for an in-date test certificate – if it doesn't have one please do not use it and report it to lab manager.

Operating Precautions:

The rating performance of the fume hood must be adequate to contain the material in use effectively.

All operations performed in the hood should be done so at least 150 mm inside the hood face. The surfaces should be kept as free as possible, keeping only those items required for the experiment in the hood, as too many items will disrupt airflow

Any rear vents must be kept clear and free from a build-up of dust or blockage by solid material e.g. paper tissues.

Unnecessary chemicals must not be stored in a fume-hood that is actively used for chemical work.

The front sash must be kept closed as far as is comfortable while working in order to offer the maximum protection to the user and fully closed when not actively working.

NEVER place your face inside the fume hood.

If airflow fails for any reason, work must stop and the sashes be closed.

Keep sash closed whenever possible.

ALWAYS place the item you are working on at least 150 mm into the hood to ensure contaminants are drawn away from you.

Move in front of the hood and in and out slowly as quick movements may affect the air flow.

Check Lab doors are shut as this could affect the air flow through the fume hood.

Do not place electrical equipment or other ignition sources inside the fume hood when you are working with flammable liquids / gases (specific risk assessments may be required for such use).

Clean up spills immediately, disposing of waste in accordance with the COSHH Assessment.

Always check the COSHH Assessment before disposing of waste chemicals.

Operator must be trained in fume cupboard to guarantee safe daily use. Untrained Personnel are not be allowed to operate the fume cupboard. Users should operate the fume cupboard according to instructions in the manual.

Potential hazards

Substance or item handled	Associated Hazard (s)	Existing Control Measures	Risk (L/M/H)	Further Action required	Risk (L/M/H)
Use of fume cupboards.	Fume cupboard Operation	Only trained personal are allowed to use the biosafety cabinets. PPE must be worn at all times (lab coat, lab gloves and safety specs). The effectiveness of a fume-hood is much reduced if they are open too wide or cluttered with apparatus that interferes with the smooth flow of air. The fume hoods should be cleaned regularly and sashes should be at a maximum working height of 500mm. Chemicals stored in fume-hoods that are active for chemical work represent potential additional hazards in the event of an accident. All chemical should be stored properly and waste chemicals should be disposed in line with the waste disposal policy. Fume cupboards serviced annually and Air flow checked regularly.	L	No further action required if the existing control measures are adhere to.	L
Use of fume cupboards.	Electrical hazard - Electrical	Only trained personal are allowed to use the fume cupboards. Centrifuge has 32 amp single phase and fuse type C or D	L	No further action required if the existing control measures are adhere to.	L



	shock – danger of death.	(blue commando socket).			
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Persons potentially at risk:

Only the user or others near by

Action in event of an accident or emergency:

1. **Fire:** raise the fire alarm and evacuate the area.
2. If the fume cupboard fail and fumes escape into the lab, the lab should be evacuated and lab manager contacted.

Arrangements for monitoring effectiveness of control:

Daily inspection of equipment by lab technician.

Annual preventative maintenance carried by external contractor of Fume Cupboard (dale flow).

Annual preventative maintenance carried by external contractor for fire suppression system (Firetrace).

Instruction and training given to all operators which is reviewed annually.

Existing operators receive annual refresher training.

**Arrangements for monitoring effectiveness of control:
Review of the Risk Assessment:**

Date of review		Name of reviewer	
Date of next review		Signature	

Have the control measures been effective in controlling the risk?

Yes	No
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Have there been any changes in the procedure or in the information available which affect the estimated level of risk from the listed substances

Yes	No
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What changes to the control measures are required?

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Name (Please print)	Signature	LM Countersignature	Date