Procedure: Managing fume exhaust system

Purpose
To set out the procedure for managing fume exhaust systems.

Definitions

**Budget Unit** is a School, Faculty, Division, Department, Centre or Unit designated by the Vice-Chancellor as responsible for an activity of the University.

**Filter** is device for the removal of contaminants from the air stream. High Efficiency Particulate Air (HEPA) filters are used to remove dust, fine particulates, and biological agents. Activated Carbon filters are used for the removal of organic vapours.

**Fume cupboard** is five-sided exhaust hood for the capture, dilution and exhausting of laboratory emissions, especially those which are hazardous or noxious. The efficiency and safety of a fume cupboard depends upon the smooth entry of air, effective containment and scavenging of the emission from the chamber, and its safe and remote dispersal into the atmosphere. The effectiveness and efficiency of a fume cupboard also depends upon its siting\location, laboratory ventilation and nearby turbulence, and if fitted, the cleaning system (e.g. Scrubber or Filter).

**Fume exhaust system** is any system comprising a capturing hood, duct, fan, and exhaust outlet used for the removal of hazardous or noxious gases, vapours, mists, dusts and other aerosols from a work environment, store or apparatus. Fume cupboards are one from of an exhaust system.

**Fume hood** is a device mounted above a work area to receive or capture an emission. It provides little or no enclosure of the workspace and is therefore unable to attain the containment of a fume cupboard.

**Inspector** is person responsible for the testing, inspection or maintenance of a fume exhaust system.

**Laminar (air) – flow** is a non-turbulent airstream of constant velocity, substantially uniform over its cross sectional flow.

**Logbook** contains information regarding the type of cupboard, safe operation,
design characteristics, cleaning system, maintenance checks and repairs, and performance test results. Logbooks should be kept with the fume exhaust system. An example logbook can be found below. A clear plastic sleeve fixed to the exhaust system (e.g. fume cupboard face) with loose-leaf sheets is acceptable as a logbook.

**Make-up air** the air needed to replace the air that is removed from the room by the fume exhaust system.

**Operation** is a task, process, mechanism or equipment capable of generating a hazardous or noxious emission.

**Sash** is the transparent safety screen between the work chamber and the operator. It can be adjusted vertically (or horizontally) to vary the size of the working aperture.

**Scrubber** is a wet air cleaning technique\equipment for the removal of water soluble contaminants (eg. acid gases, biological agents) and some dusts from the exhausted air. In general, they involve spraying an aqueous solution onto a coarse filter material (increasing the water to gas contact area) within the airflow. The contaminant adheres to or dissolves into the aqueous solution where it is physically or chemically removed from the air stream.

**Services** are the supplies of lighting, electricity, water, and compressed gases etc., which are available in the fume cupboard.

**Site contact** is the person a contractor is to deal with to get access to an area, and to inform of any deficiencies. This person may be the business, laboratory or workshop manager or the safety officer.

**Procedure**

**Emergency Information**

Direct emergency queries to the local area management, then Work Environment Group, HR Division (x52193). The local area is responsible for coordinating any Emergency Services response.

After-hours, contact ANU Security (x52249).

1. This is ANU's procedure for approving, purchasing, installing, using and maintaining fume exhaust systems. A fume exhaust system is any system with a capturing hood, duct, fan, and exhaust outlet that removes hazardous or harmful gases, vapours, mists, dusts and other aerosols from a work environment, store or apparatus to reduce potential hazards such as accumulating explosive gases.

2. ANU has classified fume exhaust systems according to AS 2243.8:2006.
• See: Appendix 2 for classifying fume exhaust systems
• See: Guideline A for a description of Risk Management associated with fume cupboard systems.

System user

3. The user is responsible for:
   • using the correct type of fume cupboard for the work/process/activity they wish to undertake
   • See: Appendix 2 Classifying Fume Exhaust Systems.
   • Note. For direct enquiries on the suitability of the system contact the Building Safety Officer, OHS Committee or the Occupational Health & Safety Officer.
   • operating the system safely as with manufacturers' requirements
   • See: Guideline in the safe use of fume cupboard
   • designing and setting up their laboratory experiment to ensure they minimise any hazardous emissions and any release occurs in a controlled manner
   • cleaning the workspace before any maintenance
   • updating the Logbook
   • reporting any faults or incidents
   • when not working at the fume cupboard, please lower the sash.

Note: A variable speed fume cupboard works most efficiently when the sash is down, reducing the tempered air being exhausted, saving electricity associated with heating and cooling costs and hence reducing greenhouse gas emissions. Not only will lowering sashes save money (approximately $400,000 a year across the University), laboratories will be more comfortable and just as safe. Stickers are available from ANU Green.

See: Fume cupboard showing sticker.

Operations Manager, Building Safety Officer or delegated representative

4. The Operations Manager, Building Safety Officer or delegated representative is responsible for:
   • ensuring the operation of the scrubber (if fitted) is checked at least every 4 months (i.e. a minimum of 3 times per year) to ensure the scrubber is functioning correctly
• updating the Logbook
• carrying out random checks on chemical usage to ensure that it complies with the fume cupboard grading
• consulting the OHS Representative (via OHS.officer@anu.edu.au) on proposed changes to the location and/or classification of fume exhaust systems
• assisting in the notification of maintenance work to be conducted on fume exhaust systems.

**Maintenance contractor**

5. The maintenance contractor is responsible for:
   • conducting general inspections and maintaining the fume exhaust system
   • updating the logbook after completing any work
   • accessing rooftops, roof and ceiling spaces or confined spaces in accordance with the University's policies and procedures.

**Note.** Standard Safe Operating Procedures are available from the local contact person.

**University Occupational Health and Safety Officer**

6. The University Occupational Health and Safety Officer is responsible for:
   • liaising with the Building Safety Officer and OHS committee on all aspects of the fume exhaust systems
   • classifying the fume exhaust system, according to the classification system in Appendix 2
   • assessing the fume cupboards for upgrade under the Facilities & Services Division upgrade program
   • inspecting the system and confirming details of any failed performance test in the event of any dispute.

**University Maintenance, Facilities & Services Division**

7. University Maintenance, Facilities & Services Division, is responsible for:
   • liaising with building designers and constructors to ensure they follow this procedure
   • managing, installing and commissioning new or upgraded fume exhaust systems
- responding to maintenance requests
- conducting or arranging six-monthly and annual maintenance routines as described in Part 4

Note: Local workshop staff may conduct six-monthly and annual or regular maintenance if there is an agreement with Facilities & Services University Maintenance to do so.

- conducting or arranging yearly checks, including performance tests under AS/NZS 2243.8
- labelling the fume exhaust system with the correct signage (see: Appendix 4)
- maintaining the building's ventilation design plans and characteristics.

8. The following Table describes the method for approving and buying a new fume exhaust system or varying an existing unit.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Who</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Requesting Officer</td>
<td>Completes a Fume Exhaust System Request Form and Site Plan and sends them to Work Environment Group.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note. Use the approved form for all requests for installing a new system or varying an existing unit.</td>
</tr>
<tr>
<td>2</td>
<td>Work Environment Group</td>
<td>• Inspects the proposed site for suitability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Checks the exhaust system classification is correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Performs any variations in consultation with the Requesting Officer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Forwards the completed Request Form and Site Plan to Facilities and Services, University Maintenance, with a copy to the Budget Unit.</td>
</tr>
</tbody>
</table>

Notes.
1. The assessment may be performed in consultation with Facilities and Services staff and the relevant Business, Operations, Safety, and/or Technical staff.
2. Meets the criteria of AS/NZS 2243.8.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Who</th>
<th>Description</th>
</tr>
</thead>
</table>
| 3     | Facilities and Services | • Checks the requirements and sends a Services, Construction and Special Requirements package to the Requesting Officer.  
        |                      | • Advises the relevant officer of services for alternatives and construction materials available for their system. |
| 4     | Requesting Officer   | Completes the package and returns it to Facilities and Services.             |
| 5     | Facilities and Services | • Approves the purchase, sends a copy of the approval to the Requesting Officer and keeps the original documentation.  
        |                      | • Contacts the manufacturer or supplier to find out system availability.  
        |                      | • Develops the contracts for purchase and installation and sends them to the manufacturer/supplier. |

2. The following Table describes the installation and acceptance of the fume exhaust system.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Who</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Facilities and Services</td>
<td>If: the installation complies with AS/NZS2243.8,</td>
</tr>
</tbody>
</table>
|   |   | Then:  
|   |   | contacts the manufacturer/supplier and organises the installation of the fume exhaust system.  
|   |   | If:  
|   |   | the installation does NOT comply with the Australian standard,  
|   |   | Then:  
|   |   | contacts OHS Branch to approve the installation of the system.  
|   | 2 | OHS Branch  
|   |   | • Assesses compliance issues.  
|   |   | • Approves the installation.  
|   |   | • Consults with Fire Safety Officer regarding fire detection and suppression, if relevant.  
|   |   | • Forwards the approval to Facilities and Services  
|   | 3 | Manufacturer/supplier  
|   |   | • Installs the fume exhaust system.  
|   |   | • Conducts compliance and acceptance testing.  
|   |   | • Enters the following details in the system's Logbook:  
|   |   |   • face velocity,  
|   |   |   • smoke capture test,  
|   |   |   • emergency shutdown activation from the fire detector (if fitted),  
|   |   |   • noise level and  
|   |   |   • illuminance,  
|   |   | • Notes any shortages and compliance issues in the Logbook.  
<p>|   |   | See: Fume Exhaust System Logbook – Example (attached below) |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Entity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td>Provides documentation to the Budget Unit and Facilities &amp; Services for the fume exhaust system, including: Installation requirements, System specifications (including any fire control measures), Commissioning tests, Operator's handbook, Maintenance procedures and schedule, Instructions in cleaning the system (if fitted), and any special details. Provides a report on any unusual or conflicting reports to Work Environment Group. Provides a report to Facilities and Services in the format of AS/NZS 2243.8 Appendix F.</td>
</tr>
<tr>
<td>4</td>
<td>Facilities and Services</td>
<td>If: the fume exhaust system is critical in the operations, Then: Organises an independent consultant to confirm compliance.</td>
</tr>
<tr>
<td>5</td>
<td>Independent Consultant</td>
<td>Confirms compliance as in AS/NZS 2243.8 Appendix F and provides the report to Facilities and Services.</td>
</tr>
<tr>
<td>6</td>
<td>Facilities and Services</td>
<td>Hands over fume exhaust system to the User for acceptance. Note. All tests must have a favourable result before accepting the fume exhaust system.</td>
</tr>
</tbody>
</table>
2. **Fume cupboards should meet the requirements of AS/NZS 2243.8 Safety in Laboratories – Fume cupboards.**

Exception. The minimum discharge height may be reduced to at least 1 metre above the ridge of a pitched roof or at least 1.8 metres above the deck of a flat roof.

Note. Installations in new buildings should comply with the Australian Standard at the time of construction. Any deviation from the Standard must be approved by Work Environment Group.

**Fire precautions**

3. **Fume exhaust systems are occasionally used for some tasks where there is a significant risk of fire. Risks should be reduced to As Low As Reasonably Practicable (ALARP) at the source following good practise. Controls may include:**

   - using minimum quantities of chemicals
   - condensers on distillation apparatus or for solvent evaporation and distillation in an inert atmosphere (e.g. under nitrogen).

4. **At the University, a fume exhaust system (a fume cupboard) is not generally fitted with fire detection or suppression systems due to issues with the reliability of components operating in the exhaust stream. At the initial evaluation of the Fume Exhaust System Request Form the risk assessment will determine if a fire detection and/or suppression system is required. If required then consider:**

   - the technical and practical effectiveness, within such environments with the aim of minimising false alarms and system failures.
   - including a thermal detector. The detector should be linked to the building's emergency control panel, or to a local audible and visible alarm and activate at no more than 60 °C
   - be capable of automatically isolating electrical power and flammable gas services to the fume cupboard. A thermocouple or water-flow detector may be suitable for this.
   - including a misting water sprinkler. The sprinkler head should be fitted in the fume cupboard throat to protect the exhaust duct by cooling any hot gases drawn into the exhaust.

Warning. The sprinkler should not be linked to the main sprinkler system.

   - Any fire detection/suppression system should be inspected at least yearly.

5. **The University's Fire Safety Officer must assess fire suppression for new**
installations and the requirements of the items above.

6. Buildings with a sprinkler system, a fire sprinkler head should be within 1 m of the front of the fume cupboard, or within the worker's area.

7. A fire extinguisher must be available near the work area under AS/NZS2243.8, Section 2.14.3, Fire extinguishers.

8. The User should act to limit emissions through the proper design and control of the experiment or process. Emissions should not exceed the occupational exposure guidelines or the Environment ACT guidelines (if determined).

9. The Budget Unit and OHS Branch, Work Environment Group may request details of an experiment or process at any time to confirm the emissions are below guidelines.

10. Inspection, testing and maintenance may take one of several forms:

   • periodic cleaning of the fume cupboard by users, regularly and before periodic maintenance
   • periodic maintenance
   • performance testing, and
   • specific inspection, testing and maintenance, especially of filters.

**General maintenance principles**

11. The following general maintenance principles apply:

   • general maintenance is the responsibility of Facilities & Services, although Budget Units may take on minor maintenance
   • before maintenance begins:
   • place a sign near the controls (or on the fume cupboard sash) as System under maintenance signage. Remove any signs when not needed or the work has finished
   • the user shall remove all chemicals from fume cupboards
   • isolate fume cupboards from the power supply to prevent operation

Note: A similar process that meets the aim of protecting workers on the roof and notifying relevant staff\students is also acceptable.

   • record all maintenance in the exhaust systems logbook.
Periodic cleaning of fume cupboards by the users

12. Regularly and before maintenance operations, fume cupboards must be cleaned to:
   - improve their life and performance, and
   - ensure they are free of risk to users and maintenance staff.

13. The following protocol applies.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wash the entire interior surface of the work area with detergent solution.</td>
</tr>
<tr>
<td>2</td>
<td>When practical, remove the rear baffles (where fitted) to allow thorough cleaning.</td>
</tr>
<tr>
<td>3</td>
<td>Where applicable, remove the worktop and thoroughly clean the sump and sink.</td>
</tr>
<tr>
<td>4</td>
<td>Clean both sides of sash (if fitted).</td>
</tr>
<tr>
<td>5</td>
<td>Wash, rinse and dry all surrounds. Take care around electrical fittings.</td>
</tr>
</tbody>
</table>

Periodic maintenance (six monthly) and performance testing

2. Use the maintenance schedule and performance testing in the following Table as a guide for minimum requirements. More frequent maintenance may be required where the fume cupboard is in continual use.

Note. Record all results in the fume exhaust system Logbook.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspect and maintain fans, their motors, drives (including belts) and bearings. Lubricate where suitable.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>2</td>
<td>Inspect and report on deficient lighting or noise problems.</td>
</tr>
<tr>
<td>3</td>
<td>Inspect the fire damper and the release mechanism, if fitted, and replace fusible link, if needed.</td>
</tr>
<tr>
<td>4</td>
<td>Check that any air-cleaning device, if fitted, is working properly and maintain if needed.</td>
</tr>
<tr>
<td>5</td>
<td>Check and inspect sash cable condition on all cupboards over 1500mm in width</td>
</tr>
<tr>
<td>6</td>
<td>Check the scrubber and wash-down facility, if fitted, is functioning properly</td>
</tr>
<tr>
<td>7</td>
<td>Perform a face velocity test and record the results. If problems are obvious then carry out a full smoke test. Conduct the smoke test as described in AS/NZS 2243.8. The laboratory doors must be closed during the tests. Where multiple fume cupboards exist in a room, the remaining fume cupboards should be at a minimum flow position unless otherwise requested.</td>
</tr>
<tr>
<td>8</td>
<td>Check the condition of the thermal detector and sprinkler heads, if fitted.</td>
</tr>
<tr>
<td>9</td>
<td>Check the scrubber and wash-down facility, if fitted, are functioning properly.</td>
</tr>
<tr>
<td>10</td>
<td>Record results of the inspection in the system Logbook and forward a copy of the results to Facilities and Services, Work Environment Group and the Budget Unit</td>
</tr>
<tr>
<td>11</td>
<td>Attach a self-adhesive label to the fume cupboard showing the inspection date, name of inspector, report number and Pass/Fail.</td>
</tr>
</tbody>
</table>
Annual maintenance

3. Annual maintenance includes periodic maintenance (six-monthly) plus the following.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Remove any baffles to help cleaning. Clean both baffles and rear of the chamber. Cleaning should be performed by an experienced user or under guidance.  

Note: Fume cupboards draw through many cubic metres of air per day. This includes dust and experimental debris behind the baffles and in the ductwork, increasing the risk of fire. Because of the difficulty of removal, accessibility, use and condition of various baffles, Budget Unit management may extend the cleaning frequency, but it should not exceed 5 years. |
| 2    | Check the condition and satisfactory operation of the fume cupboard system. |
| 3    | Check condition of services to the cupboard and ensure that all identified and operational. |
| 4    | Check the stability and condition of the discharge stack. |
| 5    | Inspect the condition of the exhaust ducting, where possible, the joints and ensure drain points are clear. |
| 6    | Check the make-up air balance. |
| 7    | Check the operation of the emergency isolator and isolation of services. |
| 8    | Check the operation of the low-flow sensor and automatic isolator by changing the airflow conditions to the fume cupboard. |
9. Check the condition and operation of the fire control precautions (if fitted).

10. Record results of the inspection in the system Logbook and forward a copy of the results to Facilities and Services, Work Environment Group and Budget Unit.

11. Attach a self-adhesive label to the fume cupboard showing the inspection date, name of inspector, report number and Pass/Fail.

**Specific inspection, testing and maintenance**

**Fume scrubber pH maintenance by the User**

2. Where a scrubber is fitted to neutralise acidic/alkaline emissions, it is important to maintain the active solution pH. Use the following protocol to inspect, test and maintain fume scrubber pH.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conduct a risk assessment and put suitable controls in place to reduce the risk. Wear suitable PPE.</td>
</tr>
<tr>
<td>2</td>
<td>Before using a fume cupboard, check the scrubber is controlling the expected emissions.</td>
</tr>
</tbody>
</table>
| 3    | For high usage systems, test the pH of the fluid every two to four weeks and drain the fluid in the sump to sewer when needed.  

Note. Clean the system often if indicative from inspections and testing. |
| 4    | Replace the fluid and test to ensure the pH level is correct. |
| 5    | Clean and keep the sump as the manufacturers' specifications. |
Fume scrubber maintenance by the User or a Contractor

2. The special filter pads in the fume cupboard scrubber should be inspected at least every 12 months. Use the following protocol.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conduct a risk assessment and put suitable controls in place to reduce the risk. Wear suitable PPE.</td>
</tr>
<tr>
<td>2</td>
<td>If the filters need cleaning, remove them according to the manufacturer's instructions.</td>
</tr>
</tbody>
</table>
| 3    | Wash the filters thoroughly (in an approved facility) with detergent and water, and allow them to dry.  
Warning. Do not use a high-pressure hose on the pads. |
| 4    | Refit the filters according to the manufacturer's instructions and check for leaks.  
Note. Replace the filters if damaged. |
| 5    | Record results in the system's Logbook. |

See: Fume Exhaust System – Wet Scrubbers Guideline for further details

Carbon Filters

2. Inspect activated carbon filters, if fitted, at six-monthly intervals (maximum). In cases of constant high-level use of toxic materials, check the system effluent often for contamination. If there is obvious fume and odour...
breakthrough, notify Facilities & Services to install replacement filters.

**Non-conforming equipment**

3. Non-conforming fume exhaust systems are those that:

   - fail the smoke test (described as Dangerous in the AS 2243.8), and
   - cannot achieve a face velocity of at least 0.4 m/s under any usable condition.

4. Any fume exhaust system that does not conform to the specified performance criteria should be tagged or labelled. The Inspector before leaving the site shall advise the Site Contact (and users) of the details of the nonconforming system. ANU Work Environment Group should also be notified and if needed advise on any other suitable action.

**Summary of results**

5. A summary of the fume exhaust system results shall be send to the local Budget Unit and Work Environment Group for information.

6. Reported results shall include –
   
   - be. Face Velocity Tests. The average of the mean velocities from the measurement points should be recorded.
   - bf. Smoke tests, to which the following interpretation shall apply:
     
     Good – smoke travels straight to exhaust without reverse flow or eddies.
     
     Fair – reverse flow or eddies may be present but not to the extent where the smoke can escape from the confines of the fume cupboard or be blown back over any part of the operator.
     
     Dangerous – reverse flows or eddies can escape from the confines of the Fume Cupboard or cause the smoke to contact the operator in normal operation. A danger tag shall attached to the exhaust system to prevent its use.

7. Budget Units should keep the following records for their fume exhaust systems:

   - initial documentation – Request form and site plan
   - purchase details – System details incorporated in the purchase contract
   - commissioning documentation
   - annual and six monthly testing results
   - logbook
• labels.

Reclassifying

8. If the proposed use exceeds its current classification, it is the user's responsibility to upgrade, by a formal request, to Work Environment Group. An interim measure can include access to a suitable exhaust system.

See: Fume exhaust system request form

9. Where practical, an upgrade of a fume exhaust system may be possible by fitting a cleaning device (filter or scrubber).

10. When the requirements of the fume exhaust system change, to a point where the scrubber or cleaning device is no longer needed, approval must be sought from the Work Environment Group before the cleaning device can be decommissioned or rendered inoperative.

11. Label the modified fume exhaust system according to its new classification.

Decommissioning

12. Any exhaust system that is no longer required shall be decommissioned or removed by Facilities and Services\University Maintenance. The logbook shall be kept by the local Budget Unit for a period of no less than 5 years.

13. Where a decommissioned system is not expected to be reactivated in the foreseeable future, the redundant system should be removed. This shall include the ductwork, fan, scrubber and associated equipment.

14. Any fume exhaust system that cannot be brought to the classification required, shall be reclassified, decommissioned or removed.

Incident reporting

15. Reporting incidents, accidents, significant exposures and dangerous occurrences helps the University community avoiding repeated incidents. All incidents involving the fume exhaust systems at the university must be reported via the University's on-line Incident Notification Form.

See: University's on-line Incident Notification Form.

Training obligations/courses

16. Work Environment Group runs chemical safety courses. Some local OHS Committees have made these courses compulsorily for new chemical users. Local induction must cover chemical safety and management requirements.
See: Chemical safety courses and Work Environment Group.

Bibliography

- Commonwealth Legislation
- Work Health and Safety Act 2011
- Work Health and Safety Regulations 2011
- Australian Standards
- AS 2243.8:2006 Safety in laboratories, Part 8: Fume cupboards.
- Facilities and Services, Fume Cupboard Maintenance Contract

Classifying fume exhaust systems

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>General exhaust system (GP)</td>
<td>Fume exhaust systems other than fume cupboards.</td>
<td>Photographic laboratory slot exhaust systems, Welders elephant trunk exhaust system, soldering fume extraction system</td>
</tr>
<tr>
<td></td>
<td>These should comply with relevant standards and reduce workplace contaminants below the occupational exposure standard.</td>
<td></td>
</tr>
<tr>
<td>Ventilated work area (V)</td>
<td>Not a fume cupboard</td>
<td>A hood over a bench to improve general ventilation</td>
</tr>
<tr>
<td></td>
<td>Used as a ventilated work area. For non-toxic storage and work</td>
<td></td>
</tr>
<tr>
<td>Fume enclosure (FE)</td>
<td>Not a fume cupboard Used as a ventilated storage area</td>
<td>A ventilated cabinet for the use/storage of low to moderately hazardous materials</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fume cupboard – standard (ST)</td>
<td>Standard Fume cupboard. Cupboard manufacture, installation, and air velocities conform to AS 2243.8. Dilution of air should ensure that the discharge complies with the occupational exposure standards.</td>
<td>Laboratory fume cupboard</td>
</tr>
<tr>
<td>Fume cupboard – scrubbed (SC)</td>
<td>Scrubbed fume cupboard. Standard fume cupboard fitted with an air-cleaning device. Cupboard manufacture, installation, and air velocities conform to AS 2243.8. Dilution and scrubbing of the air ensures the discharge complies with the occupational exposure standards.</td>
<td>Fume cupboards used in high-volume acid laboratories. Can be used as a standard fume cupboard.</td>
</tr>
<tr>
<td>Fume cupboard – perchloric (FP)</td>
<td>Perchloric acid fume cupboard. The cupboard is suitable for large volumes of</td>
<td>Must be used when handling perchloric acids. Can also be used as a</td>
</tr>
</tbody>
</table>
water soluble chemicals as well as perchloric acid\ perchlorates. It incorporates a water wash down facility.

| Fume cupboard – special purpose (SP) | Special purpose fume cupboard. Cupboard manufacture, installation, and air velocities conform to AS 2243.8. Discharge may be filtered, scrubbed, incinerated or incorporate a wash down facility to meet special requirements. | Downdraft heavy organic vapour\ liquid fume cupboards. Care should be taken when using these cupboards for other purposes, as they may not function efficiently. |

Logbooks
17. Logbooks:
   - inform the user of the fume exhaust system's performance tests results and whether the fume cupboard is working satisfactorily
   - inform maintenance personnel of the system's faults and last repair, user's maintenance and checks
   - provide a record of all maintenance work conducted.

18. A Logbook must be specific to a particular cupboard. It should be located at the fume exhaust system. Information to be recorded should include:
   - commissioning test results
   - annual and six monthly performance testing results – this may be supplemented by a test report label (see section 64)
   - repair or other maintenance
   - fault reports
   - scheduled cleaning details
• wash-Down details in perchloric cupboards
• scrubber conditions or pH
• scrubber drainage date
• filter checks, type etc
• additional comments

19. All of these entries should include the:
• date
• initials or name of the person making the entry.

20. Upon the decommissioning of a fume exhaust system, or the completion\filling of a logbook, the logbook shall be kept by the Budget Unit for a period of no less than 5 years.

Labels

21. There are several labels or signs relevant to or affixed to fume cupboards –
• Manufacturer labels
• Fume cupboard classification labels (for scrubbed, perchloric and special systems)
• Australian Standard warning label (including spillage containment volume of the fume cupboard)
• Performance test results label.

22. The performance test results label indicates whether the system passes the required tests.

23. A Danger Tag may be affixed to the fume exhaust system. A fume exhaust systems under repair shall be tagged "System under maintenance – Do not use" and all chemicals and operations in the cupboard should be removed. The issuing person is the only person who may remove this tag.

24. In the event of a failed performance test, a "Danger – Do not use" tag shall be attached. This tag should only be removed by an authorised person after due consideration of the fault.

See: Isolation and Danger Tagging Procedure

Warning. Failure to adhere to the Danger Tag system can result in severe disciplinary action.