# **Standard Operating Procedure (SOP) Title: Fume Cupboards (FC, Fume hoods)**

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| Assessor: | Joshua Linfoot | | | Location of work: | MSRH 502 |
| Principal Investigator: | | | Prof Alan Spivey | | |
| Date of approval: | | 13/09/2021 | | Date for review: | 13/09/2022 |

## **Justifying the hazards:**

FCs are items of electrical equipment that have to be used when handling hazardous chemicals.

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| Identify hazards with specific risk assessments and a College or a departmental approval process | | | |
| [Ionising radiation sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) |  | [Biological sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) (microorganisms, human/animal tissues, plants) |  |
| [Class 3R, 3B or 4 Lasers](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/lasers/SitePages/laserhome.aspx) |  | [Offsite work](http://www.imperial.ac.uk/safety/safety-by-topic/off-site-working/) |  |
| Confirm if [Lone working](https://www.imperial.ac.uk/safety/safety-by-topic/lone-working/) is permitted with this SOP?  If it is permitted, describe the control measures for lone workers: | | | |

## **Preparing for the SOP:**

* **DON’T** use FCs for handling hazardous biological material (use a Microbiological Safety Cabinet for biological agents).

*More information can be found in the College code of practice for selection, installation, use, maintenance and decommissioning of Fume Cupboards can be found here:* [*http://www3.imperial.ac.uk/safety/subjects/localexhaustventilation*](http://www3.imperial.ac.uk/safety/subjects/localexhaustventilation)

* **DON’T** leave FC dirty.
* **DON’T** mute or ignore any FC alarms – slowly close the sash, and if alarm doesn’t stop, report to supervisor, lab technician or Facilities Management (ext 48000 or [eo.csc@imperial.ac.uk](mailto:eo.csc@imperial.ac.uk)).
* **DON’T** use an out of service FCs (check service record card displayed on FC).
* **DON’T** use FCs as routine storage space.
* **DON’T** use naked flames in the FC for prolonged periods of time.
* **DO** complete the e-learning course [Imperial College Guide to Fume Cupboards’](https://www.imperial.ac.uk/staff-development/safety-training/safety-courses-/month-one-safety-training-most-/).
* **DO** keep lab doors and windows closed to ensure negative room pressure relative to the corridor and proper airflow into the hood.
* **DO** check Firetrace indicator and to Estates if it is in red zone. Do not work with flammables, pyrophorics and ignition sources in the FC with faulty firetrace system.

## **Procedure:**

# **Before use:**

* Check the airflow monitor/gauge before each use.
* Keep the FC clear of any extra bottles and equipment; have there only what you need for the experiment to prevent turbulence, which can reduce protection offered by the FC.
* Any large pieces of equipment should be located towards the rear of the FC and raised up (on feet) to allow for unimpeded airflow.

# **While using:**

* No part of your body except your hands and forearms should ever be inside a fume cupboard. Leaning into the FC to obtain a better view places your face in closer proximity to the experiment and is particularly dangerous.
* Minimise sash movements and ensure that any necessary movement is carried out slowly.
* Work in the middle of the FC work surface, not at the very front (at least 150mm inside the FC).

# **After use:**

* Clean the FC and remove items after you have used it.
* When not in use, lower the sash of the FC as far as possible to reduce energy consumption and protect others in the lab.

## **Disposal:**

Before the FC can be disposed of, it must be thoroughly decontaminated and a sign indicating this has been completed attached to the equipment.

## **Personal Protective Equipment (PPE):**

## When using a FC the requirements for PPE will be dependent on the lab where the FC is located. Follow the relevant rules for the lab where the FC is located.

## **Risk Analysis of SOP and emergency procedures:**

(In addition to [Safe Lab Practice](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/SitePages/Basic%20Laboratory%20Rules%20for%20All%20Laboratories%20in%20FoNS.aspx))

### **Always remember to include fire associated risks and control measures where appropriate**

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| Hazard | Raw risks | Current control measures | Residual risk  (Low/Med/High) |
| Electrical equipment and cables | Electrocution and electrical fire | Commercial equipment, do not modify.  Ensure regular portable appliance testing (PAT).  Check Firetrace indicator on the Fumehood.  Visual inspection of equipment and cables prior to each use.  Immediate clean of any spills.  Ensure plugs, sockets, cables and equipment positioned so as not to be at risk of ingress from liquids.  Ensure a CO2 extinguisher is available.  Ensure easy access to the power supply. | Low |
| Loss of containment | Exposure of operator and those in the lab to hazardous chemicals | FCs maintained and serviced (see above). All users know to stop work if the FC alarm indicates an air flow problem.  Users complete the e-learning course, Imperial College [Guide to Fume Cupboards](https://www.imperial.ac.uk/staff-development/safety-training/safety-courses-/month-one-safety-training-most-/) | Low |
| Glassware and glass parts | Cuts and splinters from broken glass | Visually inspect glassware for cracks and other defects before and after use. If glassware damaged arrange for repair or dispose of. | Low |
| Hazardous materials | Exposure via inhalation of hazardous reagents | Work with lowered sash.  Ensure the FCs are cleaned before and after each use.  (Include hazards and controls of associated reagents in this or separate risk assessment) | Low |
| Sash sliding down | Crushing injury | Ensure the minimum movement of the sash. Slide sash slowly ensure to clear the way. | Low |

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| **Additional control measures to minimise residual risks** | **Implementation date** |
| Make sure you are familiar with the FCs alarm sound | n/a |

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| **Who may be harmed** | |
| Staff / students | Cleaners / Engineers |
| Supporting staff | Others (specify): |

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| **Emergency procedures** – describe the response(s) required by the user and lab members |
| In the event of an incident involving the **equipment itself** turn off the power supply, unplug and place a sign on the equipment stating it is not to be used. Arrange for repair.  **Electrical shock** - switch off power. Do not touch the affected individual until the power is definitely off. Seek immediate medical attention by calling 4444 (+44 20 7589 1000) and contacting nearby First Aid officer. Use non-conductive lever to remove them from electrical source (e.g. a dry wooden broom handle).  **Electrical fire** – If ignition occurs but extinction is managed in a controlled manner, ensure a SALUS report is completed at the earliest opportunity. If the fire is not controllable you must activate a fire alarm call point and evacuate. Inform Fire Safety Officers or Security of where the fire is and what it involves when they arrive at the building.  **Burns** - run site of injury under tepid water for 15 minutes if able (burn dressing available in first aid kits if location of the injury is awkward to rinse (e.g. leg), contact a first aider. In the case of a serious burn, seek medical attention immediately.    Clear up **broken glass** using dustpan and brush, tweezers or other suitable equipment to prevent exposure to the glass then place into the appropriate waste bin (clean or contaminated glassware).  If anyone is injured while using the equipment contact first aider.  If any **cuts or exposures** to hazardous substances, ensure affected area is held under running water for at least 15 mins and the wound is encouraged to bleed, ask for first aid assistance. If water is not available use alcohol free wipe from the First Aid Kit and dress the wound. Seek further medical attention if required.  If **crushing injury** - contact first aider immediately – use ice/cool pack if on hand only to reduce immediate swelling – seek medical attention if required.  (Include emergency procedures associated with the use of hazardous substances if relevant) |

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| Recommended trainings and records: |
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| List of individuals competent to demonstrate safe work practice and train others (level 1 trainers): | Names of those that have been trained and can work unsupervised (level 2) and date training completed: |
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