



# Fume Hoods

## 1. Purpose:

Provide guidance on the proper and safe use of fume hoods in the Teaching Laboratories.



## 2. Scope:

Staff, Faculty, Postdoctoral Fellows, Graduate Students, Undergraduate Research Students, Volunteers and visitors who will use or operate a fume hood in the Teaching Laboratories in the Department of Chemical and Physical Sciences (CPS).

## 3. Prerequisites:

EHS101: WHMIS and Lab Safety (or Annual Refresher EHS112)

EHS002: Basic Health and Safety Awareness

EHS115: Fume Hood Training

EHS602: Biosafety Training (Only when required)

CPS Onboarding Training

\*Not an extensive list. Confirm with PI, Supervisor or Manager.

#### **4. Introduction:** *(Taken Directly from UofT EHS Office)*

The fume hood is the primary control device in most laboratories for protecting employees and students from exposure to hazardous chemicals. It is also an integral part of the building air handling system. The efficiency of operation is essential in maintaining good air quality in laboratories. It is therefore imperative that it functions properly and that it be designed appropriately. UofT standards were developed in accordance with the Canadian Standards Association (CSA) Standard Z316.5-15 Fume Hoods and Associated Exhaust Systems.

In order for the fume hood to effectively protect individuals from chemical vapours, dust, gases or odours, it must be operated properly by the fume hood user.

#### **5. Responsibilities:** *(Taken Directly from UofT EHS Office)*

##### **5.1 Office of Environmental Health and Safety**

- Maintain, evaluate and revise [UofT Fume hood standard](#)
- Provide guidance in the understanding and functionality of UofT standard
- Allow all UofT workers and students to access UofT fume hood standard
- Adhere to the procedural requirements specified for the UofT OEHS in the standard

##### **5.2 University of Toronto Workers, Students and Contractors**

Any Fume Hood User and Operator should adhere to all standards identified in Section 7 of this document at all times when using and operating a Fume hood in the Chemistry Teaching Labs.

##### **5.3 Lab Managers and Supervisors**

It is the responsibility of Lab Managers and Supervisors to:

- Provide fume hood safety training for individuals under their supervision.
- To the best of their ability, ensure that such supervised individuals adhere to all standards identified in Section 7 of this document at all times

## 6. Personal Protective Equipment:

Personal protective equipment must be suitable for chemicals in use. At minimum,

- Lab coat
- Gloves
- Safety glasses or goggles

Always refer to Safety Data Sheet of chemicals.

## 7. Guidelines: *(Adapted from UofT EHS Office)*

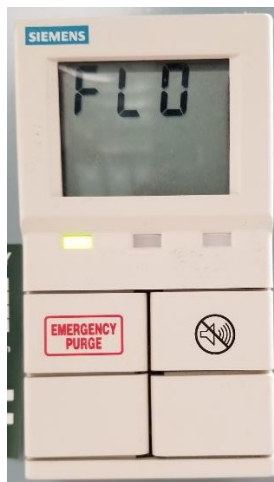
This section describes the standards and required procedures that should be followed by Fume Hood Users and Operators in the Chemistry Teaching Labs.

### 7.1 User Safety Checks

Prior to using or operating any fume hood, the following checks should be conducted to ensure the fume hood is safe to use and the alarm system is functioning properly:

#### 7.1.1 Fume hood flow alarm:

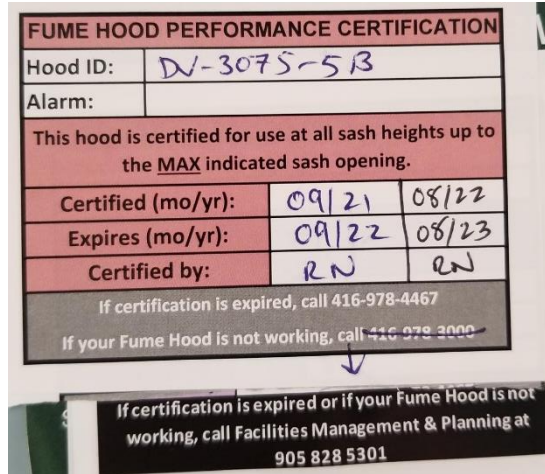
- a. Powered on and operational with face velocity of 80 fpm or higher;
- b. Not alarming. A green light and “FLO” display indicate fume hood is operating properly.



#### 7.1.2 Fume hood certification sticker:

- a. Is present and the certification is current;
- b. Safe operating heights are clearly indicated on the sticker;

c. Appropriate emergency numbers are listed in case of alarm, malfunction or certification expiration.



**7.1.3 Fume hood frame:**

a. Has reference heights indicated that correspond to the heights identified on the fume hood certification sticker.



**7.1.4 Fume hood sash:**

- a. Easy to operate;
- b. Stable;
- c. Undamaged

**7.1.5 Fume hood interior:**

- a. Clear of needless clutter;

- b. Sufficient space that allows for safe handling of chemicals;
- c. Periphery equipment – such as gas nozzles, hoses, etc. – is not damaged.

## **7.2 Fume Hood Operations**

The fume hood sash should:

- Be operated within of the safe operating range indicated on the fume hood certification sticker and the reference height on fume hood frame.
- Moved slowly.
- In the case of setting up large equipment or an experimental apparatus, it is permissible to have the fume hood sash fully open; however, the sash should be lowered to a safe working height upon completion of such activities.
- Remain closed at any time the user is not actively accessing the fume hood.
- Not be obstructed from opening and closing by obstacles in the fume hood or on the airfoil/frame.
- Kept free of paper, writing or obstructions that block visibility to the interior of the hood.

The fume hood airfoil should not be used to store materials or equipment.

Never put your head in the fume hood.

Avoid unnecessary pedestrian traffic in front of a working fume hood.

Machinery or equipment that could significantly alter the flow of the fume hood should not be used within the fume hood unless the hood's only function is to house this machinery or equipment. This includes:

- Large pieces of equipment that obstruct at least half of the fume hood bench;
- Equipment that obstructs at least a third of the fume hood bench and was added to the interior of the fume hood after the most recent certification;
- Equipment that manipulates airflow patterns, such as fans or exhaust tubes.

## **7.3 Fume Hood Care**

A fume hood must be properly maintained by the user so its function is not compromised when used for chemical protection. The procedures below should be followed to maintain the integrity of a fume hood and its operation:

- Only materials relevant to ongoing activities within the fume hood should be kept in the fume hood and only in quantities that serve the purpose of a single session or experiment.
- If excess material is stored in the fume hood, then the fume hood should be designated as a storage area and should not be used for any chemical work.
- Any interior or exterior component of the fume hood such as the work bench, frame, sash, air foil, nozzles or taps should be appropriately cleaned if contaminated.

#### **7.4 Fume Hood Alarm**

If a fume hood alarm sounds, lower the fume hood sash until the alarm stops.

If the alarm:

- Stops while the fume hood sash is still within the safe operating range indicated on the certification sticker and fume hood frame, then work can continue in the fume hood at the new height which does not trigger the alarm.
- Does not stop while the fume hood sash is still within the safe operating, then:
  1. Discontinue use of the fume hood;
  2. Disengage and unplug any heat sources in the hood;
  3. Cap any open vessels or close any compressed gas cylinders in the hood. In a situation where a volatile or gaseous compound with acute and/or severe health effects cannot be capped or prevented from leaving its vessel, then immediately shut the sash, evacuate the laboratory and contact campus safety at (905)-569-4333; otherwise, continue to the next step.
  4. Close the fume hood sash completely;
  5. Leave a note on the fume hood that indicates it is out of order and inform individuals within the lab that the fume hood is malfunctioning;
  6. Inform Facilities that the fume hood is in need of maintenance by placing a work order [here](#).

## 7.5 Fume Hood Service

If a fume hood requires maintenance due to an alarm situation or it fails any component of a User Safety Check, contact facilities by placing a work order [here](#).

If a fume hood requires recertification, contact Reza Nazari, Health and Safety Officer at [reza.nazari@utoronto.ca](mailto:reza.nazari@utoronto.ca). Recertification is required when,

- There is no sticker
- All sticker fields are not filled
- The safe operating range listed on the sticker does not match the heights indicated on the fume hood frame
- The expiration date on the sticker has passed
- A new fume hood alarm has been installed or the existing alarm has been repaired.

## 8. Resources:

[https://ehs.utoronto.ca/wp-content/uploads/2018/12/Fume-Hoods-03-Design-Standard\\_November-2018.pdf](https://ehs.utoronto.ca/wp-content/uploads/2018/12/Fume-Hoods-03-Design-Standard_November-2018.pdf)

<https://ehs.utoronto.ca/wp-content/uploads/2016/12/Fume-Hoods-05-User-Guidelines-Updated.pdf>