

## Standard of Care # 1: Ventilation Engineering Controls

### Guideline

Revision Date: 10/13/21

**Applies To:** University of Michigan researchers needing to install, repair, or certify engineering control equipment.

Environment, Health & Safety (EHS) ventilation engineering controls certification program is designed to ensure that the following critical systems are working properly and meet current health and safety standards:

- [Biological Safety Cabinet \(BSC\)](#)
- [Chemical Fume Hood \(FH\)](#)
- [Vertical Laminar Flow Polypropylene \(VLFP\) Fume Hood](#) “Hybrid Hood”
- [Local Exhaust Ventilation \(LEV\)](#)
- [Laminar Flow Device \(LFD\)](#)

Services to units outside of the General Fund structure are billed for provided services

### Biological Safety Cabinet

A biological safety cabinet (BSC) is a Class II unit providing personnel, product and environmental protection. The majority of applications involve containment of biological hazards while providing sterile field for vulnerable experimental materials.


#### Provided Services

EHS provides annual certification with aerosol challenge filter testing, filter repair/replacement, balancing, maintenance (see [Standard of Care # 4: BSC Maintenance](#)) and decontamination as necessary. Additional certifications beyond the annual will be billed to the BSC owner.

Maintenance, parts, and filters will be rebilled on BSCs over 10 years old (see [Standard of Care #3: BSC Service Criteria](#)).

New units still under warranty (typically 4 years) will be repaired by the manufacturer’s representative (See [Standard of Care # 5: BSC Warranty Work](#)). EHS technicians are approved to provide warranty work on most BSC brands with manufacturer’s authorization.

#### Reporting

<b>M</b> ENVIRONMENT, HEALTH & SAFETY UNIVERSITY OF MICHIGAN		Biological Safety Cabinet Certification	
Building _____		Room _____	
S/N _____		Date _____	
Next Cert Month _____		Magnehelic _____	
Signature _____			
(734) 647-1143 • 1239 Kipke Dr., Ann Arbor, Michigan 48109-1010			

A BSC certification sticker (actual size 3.5" x 2 ") is placed on the unit indicating the date of the certification.

If requested, a report can be printed from the database for BSCs requiring detailed documentation for audit. An email report detailing equipment problems, filter change requirements, and maintenance repair is sent to the listed owner of the device. For archive, an Access report is generated and saved semiannually at S:\Biosafety\1.6 BSC Reports.

# Chemical Fume Hood

A chemical fume hood (FH) only provides personal protection. It continuously delivers airflow away from the individual to the work area.

## Provided Services

EHS provides annual certification of the airflow velocities at the face of the FH and inspects safety features including, but limited to, the sash stop, the mobility of the sash, the airflow monitor, and the interior of the FH workspace. Facilities & Operations Maintenance department provides mechanical maintenance. EHS tags faulty hoods as "out of service."

## Reporting

ENVIRONMENT, HEALTH & SAFETY  
Fume Hood & Local Exhaust Ventilation Certification (LEV)  
Building \_\_\_\_\_ Room \_\_\_\_\_ Hood # \_\_\_\_\_  
Ventilation Type: Fume Hood Snorkel Other \_\_\_\_\_  
Face Velocity \_\_\_\_\_ fpm Sash Height or Distance \_\_\_\_\_ inches  
 Smoke Controlled  Magnehelec  S/N \_\_\_\_\_  
Device used: Anemometer Velgrid DIM Duct Traverse \_\_\_\_\_  
Signature \_\_\_\_\_ Date \_\_\_\_\_  
(734) 647-1143 • 1239 Kipke Dr., Ann Arbor, Michigan 48109-1010Rev

A Fume Hood certification sticker (actual size 3.5" x 2 ") is placed on the unit indicating the date of the certification.

Failing FHs are posted out of service. An email report is sent to Facilities Service Center to start work orders on these FHs. For archive, an Access report is generated and saved semiannually to S:\Biosafety\1.5 Fume hood Certification Reports. EHS tags faulty hoods as "out of service."

**DO NOT USE - OUT OF SERVICE**  
This equipment has been placed out of service by EHS due to unsafe conditions.  
EHS found this equipment to have:  
 Electrical hazard  
 Electrical hazard  
Facilities Service Center (617-0999) has been notified about this repair. Please reference the following W/O # \_\_\_\_\_  
EHS Representative: \_\_\_\_\_ Date: \_\_\_\_\_  
EHS Office: \_\_\_\_\_  
The laboratory staff must complete the following tasks before fume hood use again:  
CAP CONFORMANCE STOP REACTION STOP THE SASH  
Lab Safety

# Vertical Laminar Flow Polypropylene Hood—"Hybrid Hood"

Vertical Laminar Flow Polypropylene (VLFP) Hood is a metal-free exhausted fume hood that provides personnel protection with a purified air curtain for product protection.

## Provided Services

EHS provides annual certification of inflow and down-flow velocities with balancing as necessary. The owner must provide EHS with a manual that details certification specifications and methods. The owner is responsible for all maintenance and filter replacement costs.

## Reporting

ENVIRONMENT, HEALTH & SAFETY  
Fume Hood & Local Exhaust Ventilation Certification (LEV)  
Building \_\_\_\_\_ Room \_\_\_\_\_ Hood # \_\_\_\_\_  
Ventilation Type: Fume Hood Snorkel Other \_\_\_\_\_  
Face Velocity \_\_\_\_\_ fpm Sash Height or Distance \_\_\_\_\_ inches  
 Smoke Controlled  Magnehelec  S/N \_\_\_\_\_  
Device used: Anemometer Velgrid DIM Duct Traverse \_\_\_\_\_  
Signature \_\_\_\_\_ Date \_\_\_\_\_  
(734) 647-1143 • 1239 Kipke Dr., Ann Arbor, Michigan 48109-1010Rev

A Fume Hood certification sticker (actual size 3.5" x 2 ") is placed on the unit indicating the date of the certification.

Failing VLFPs are posted out of service. An email report is sent to Facilities Service Center to start work orders on these VLFPs. An email report detailing VLFP E equipment problems, filter change requirements, and maintenance repair **not** performed by Facilities & Operations is sent to the equipment owner. For archive, an Access report is generated and saved semiannually to S:\Biosafety\1.5 Fume hood Certification Reports.

## Local Exhaust Ventilation

Local exhaust ventilation (LEV) equipment is a variety of configurations for local exhaust or capture of point source emissions, providing personnel protection and/or smoke, odor, dust or heat control. LEVs includes snorkels, canopies, paint booths, gas cabinets, laser cutters, etc.

### Provided Services

EHS provides inspections of safety features and a cyclic certification of capture velocities as determined by an industrial hygiene risk assessment. Facilities & Operations department or the owner provides maintenance for the LEV. EHS tags faulty hoods as "out of service."

### Reporting

An LEV Hood certification sticker (actual size 3.5" x 2 ") is placed on the unit indicating the date of the certification.

An email report is sent to Facilities Service Center to start work orders on failing LEV equipment. An email report detailing equipment problems, filter change requirements, and maintenance repair **not** performed by Facilities & Operations is sent to the equipment owner. For archive, an Access report is generated and saved semiannually to S:\Biosafety\1.9 LEV Reports.

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## Laminar Flow Device

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A laminar flow device (LFD) is a HEPA-filtered cabinet designed specifically for product protection and quality control (clean bench). LFDs do not provide personnel or environmental protection. Used for “sterile field” work, either clinical preparations or research.

### Provided Services

All services provided for LFDs will be billed. LFDs are designed for quality control, **not** occupational health and safety. At the request of the owner, EHS will provide annual certification of face velocity, aerosol challenge filter testing, and inspection of full functionality to ensure sterile field for QA/QC reporting. Maintenance and filter replacement services are also available, and the owner of the LFD will be billed for time and materials.

### Reporting

ENVIRONMENT, HEALTH & SAFETY  
Fume Hood & Local Exhaust Ventilation Certification (LEV)  
Building \_\_\_\_\_ Room \_\_\_\_\_ Hood # \_\_\_\_\_  
Ventilation Type: Fume Hood \_\_\_\_\_ Snorkel \_\_\_\_\_ Other \_\_\_\_\_  
Face Velocity \_\_\_\_\_ fpm Sash Height or Distance \_\_\_\_\_ inches  
 Smoke Controlled  Magnetic \_\_\_\_\_ S/N \_\_\_\_\_  
Device used: Anemometer \_\_\_\_\_ Velgrid \_\_\_\_\_ DDM \_\_\_\_\_ Duct Traverse \_\_\_\_\_  
Signature \_\_\_\_\_ Date \_\_\_\_\_  
(734) 647-1143 • 1239 Kipke Dr., Ann Arbor, Michigan 48109-1010Rev

An LEV Hood certification sticker (actual size 3.5" x 2 ") is placed on the unit indicating the date of the certification.

If requested, a one page report can be printed from the database for clinical units needing detailed documentation. An Access report is generated and saved semiannually to S:\Biosafety\1.6 BSC Reports. An email report detailing equipment problems, filter change requirements, and maintenance repair not performed by EHS is sent to the equipment owner.

**CAUTION**  
THIS HOOD IS  
**NOT DESIGNED**  
FOR HAZARDOUS  
MATERIALS OPERATIONS  
Contact OSEH for Details  
Local Exhaust Ventilation  
OSEH  
Occupational Safety &  
Environmental Health  
763-6973  
Building \_\_\_\_\_ Room \_\_\_\_\_  
Hood Type/Number \_\_\_\_\_  
Surveyor \_\_\_\_\_ Date \_\_\_\_\_

As LFDs are relegated specifically to non-hazardous use, they will receive a notification sticker indicating “Caution – this hood is Not Designed for hazardous materials operations” (actual size 2" x 3.5" to exclude use of biohazardous or chemically hazardous materials).

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## Data Acquisition, Storage and Use

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All inspections, certifications, and report generation are conducted with the use of Pendragon PDA software and Microsoft Access. Data storage locations are listed below.

- S:\Biosafety\2.1 Database (BSC) - Includes tables for both the BSC and LFD data
- S:\Biosafety\2.3 Database (Fume hood) - Includes tables for both FH and VLFP hood data
- S:\Biosafety\2.1 Database (LEV) - Includes all capture device and containment data

## Service Charges

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- BSC and LFD service charges are detailed in the BSC Service Criteria document.
- Certification service for General Fund customers is free of charge except for LFDs.
- Certification service charges for non-General Fund equipment including FH, VLFP, LEV, and LFD will be billed per standard rates in the BSC Service criteria document or at an hourly rate of \$82.00/ hour.

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## Related Documents

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- [EHS Standard of Care #2: Unsafe Engineering Control Equipment](#)
- [EHS Standard of Care #3: BSC Service Criteria](#)
- [EHS Standard of Care#4: BSC Maintenance](#)
- [EHS Standard of Care#5: BSC Warranty Work](#)
- [EHS Standard of Care #6: Biological Safety Cabinet \(BSC\) Decommissioning for Sale, Transfer or Scrap](#)

Ver. 10/04/2018 S:\GUIDELINES & POLICIES & WEB DOCS\Standards of Care\2018 SOC 1 EHS Ventilation Engineering Controls.doc