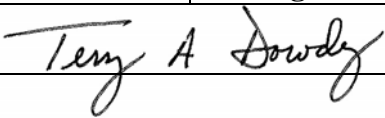


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Reviewed By Lisa Arceneaux	Approved By 	

1. PURPOSE

This procedure provides instruction for Constant Flow Fume Hood air velocity measurement and calibration.

2. SCOPE

This procedure applies to all non-recirculating constant flow fume hoods located on the Texas State University – San Marcos campus. This procedure is performed at least once per 12 months.

3. PRECAUTIONS & LIMITATIONS

- Each fume hood shall be tested with the sash in the Operating Position.
- The Minimum Operating Position is eleven inches above the top of the airfoil, or work surface if no airfoil is present.
- Fume hoods which fail minimum air flow acceptance criteria should be removed from service, a Facilities Focus should be issued for repairs.
- The TSI Incorporated Model 8345 VelociCalc or equivalent air velocity meter shall be used to perform the procedure.

4. TERMS

- Airfoil - Located along the bottom and side edges the airfoil streamlines airflow into the fume hood, preventing the creation of turbulent eddies that can carry vapors out of the hood. The space below the bottom airfoil provides source of room air for the fume hood to exhaust when the sash is fully closed. Removing the airfoil can cause turbulence and loss of containment.
- Face - The imaginary plane running between the bottom of the sash to the work surface. Fume Hood face velocity is measured across this plane.
- Operating Position – the sash position at which the face velocity is between 100 and 120 linear feet per minute (LFM).
- Sash – The sliding “door” to the fume hood. By using the sash to adjust the front opening, airflow across the fume hood can be adjusted to the point where capture of contaminants is maximized. Each fume hood should be marked with the optimum sash configuration.

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5. PROCEDURE

- 5.1 Verify the fume hood is ON.
- 5.2 Place the hood sash at the indicated Operating Position.
- 5.3 IF there is no Operating Position indicated, THEN perform the following:
 - a. Open the fume hood sash to the Minimum Operating Position.
 - b. Using the air velocity meter, verify the face velocity at the center of the fume hood midway between the bottom of the sash and the top of the airfoil (or work surface if no airfoil) is between 100 and 120 LFM.

! NOTE !

Adjusting the fume hood sash upward will decrease the face velocity, while adjusting the sash down will increase face velocity.

Do NOT adjust sash below the Minimum Operating Position.

- c. IF face velocity does not meet acceptance criteria, THEN continue to adjust fume hood sash height until criteria is met.
- 5.4 Using the air velocity meter, obtain air velocity readings (LFM) at nine different positions of the fume hood opening.
 - a. Each position should be at center of an equal cross-section of opening.

X₁	X₂	X₃
X₄	X₅	X₆
X₇	X₈	X₉

- b. Take readings where X is located.
 - c. Record the nine readings on Attachment A.

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5.5 Calculate the average face velocity as follows:

$$FV_{AVG} = \frac{\sum X}{n}$$

Where: FV_{AVG} = Average face velocity (LFM)
 $\sum X$ = Summation of all data points collected for that fume hood.
n = Number of data points recorded for that fume hood.

5.6 Record the average on Attachment A.

! NOTE !
Adjusting the fume hood sash upward will decrease the face velocity, while adjusting the sash down will increase face velocity.
Do NOT adjust sash below the Minimum Operating Position.

5.7 IF the fume hood FV_{AVG} is < 100 or >120 LFM, THEN adjust fume hood sash position (up or down) and repeat steps 5.4 through 5.6 until air flow requirements are met.

5.8 WHEN the fume hood FV_{AVG} is ≥ 100 and ≤ 120 LFM, THEN complete a “Fume Hood Operating Position” sticker (Attachment B) and attach to side of fume hood at the proper operating level.

5.9 IF unable to obtain a fume hood FV_{AVG} is ≥ 100 and ≤ 120 LFM, THEN complete a fume hood “Not Calibrated” sticker (Attachment C) and attach to the fume hood.

6. PERFORMANCE METRICS

Performance metrics will be measured by calculating the percentage of fume hoods that satisfy the average face velocity criteria.

7. ATTACHMENTS/APPENDICES

- Attachment A, Fume Hood Operating Position Calibration Data Worksheet
- Attachment B, Fume Hood Operating Position
- Attachment C, Not Calibrated

Attachment A Fume Hood Operating Position Calibration Data Worksheet

Building: _____
(Number – Name)

Laboratory: _____ Fume Hood: _____
(Number) (Number)

Air Velocity Meter: _____
(Manufacturer - Model)

Serial Number: _____ Calibration Due Date: _____

Opening Height					
Reading 1					
Reading 2					
Reading 3					
Reading 4					
Reading 5					
Reading 6					
Reading 7					
Reading 8					
Reading 9					
Average					

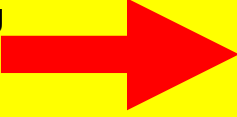
Comments: _____

Completed By: _____ Date: _____

Attachment B
Fume Hood Operating Position

Fume Hood Operating Position

Lab: _____ Hood: _____

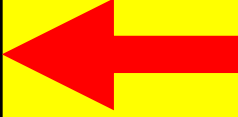
Adjust sash opening
to this position: 

Date: _____

By: _____
Risk Management & Safety Office
245-3616

Fume Hood Operating Position

Lab: _____ Hood: _____

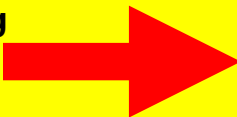
 Adjust sash opening
to this position:

Date: _____

By: _____
Risk Management & Safety Office
245-3616

Fume Hood Operating Position

Lab: _____ Hood: _____

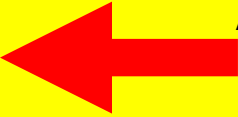
Adjust sash opening
to this position: 

Date: _____

By: _____
Risk Management & Safety Office
245-3616

Fume Hood Operating Position

Lab: _____ Hood: _____

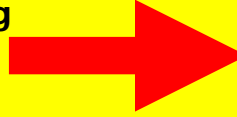
 Adjust sash opening
to this position:

Date: _____

By: _____
Risk Management & Safety Office
245-3616

Fume Hood Operating Position

Lab: _____ Hood: _____

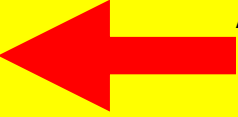
Adjust sash opening
to this position: 

Date: _____

By: _____
Risk Management & Safety Office
245-3616

Fume Hood Operating Position

Lab: _____ Hood: _____

 Adjust sash opening
to this position:

Date: _____

By: _____
Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616

NOT CALIBRATED

Building: _____

Lab: _____ Hood: _____

Do NOT use for protocols involving chemicals that generate fumes/odors.

Risk Management & Safety Office
245-3616