



# Technical Safety



## RADIATION PROCEDURES MANUAL

### Procedure Cover Sheet

Procedure Title: Fume Hoods  
Procedure Number: TSO-08-03-REV 1

Effective Date: September 1, 2008

Approved By: Richard R. Bay Date: 19 May, 2009  
Technical Safety Office Director



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## A. INTRODUCTION

Inhalation of toxic chemical vapors or radioactive materials must be prevented by performing all operations that release gases, vapors or dusts in fume hoods or glove boxes when practical. Fume hoods draw contaminants away from lab personnel and prevent their escape into laboratory areas and glove boxes isolate the contaminants from the work environment

Idaho State University requires that the average fume hood face velocity be maintained at 100 feet per minute (fpm) +/- 10%. Face velocity can be lost due to vent obstructions, duct punctures, exhaust motor failure and other system problems. If the desired hood velocity cannot be maintained, the user must make arrangements for repairs or modifications. Hood face velocities are to be checked bi-annually during regular laboratory evaluations performed by the Technical Safety Office, lab managers are encouraged to routinely verify that their fume hoods are in proper working order.

To provide full protection, the hood must be free of major obstructions to the flow of air. All lab doors should be closed to ensure maximum negative pressure within the room, and foot traffic near the hood should be avoided. The sash, or glass panel, of the fume hood serves as a shield to protect the face from splatters and excess gas or particle inhalation; it also controls the air flow of the hood system. The sash should not be raised above the sash stop (approximately 14 inches) while work is in progress, and it should be kept closed when not in use to conserve energy.

## B. PURPOSE

The purpose of this procedure is to describe the steps involved in testing fume hood face velocity to ensure that 100 fpm is attained under working conditions.

## C. REQUIRED MATERIAL(S)

Thermoanemometer

#### **D. PROCEDURE**

Fume hood face velocities are tested using a velometer; the device most commonly used at ISU is called a thermoanemometer. The procedure for fume hood inspection is as follows:

1. Ensure that the hood monitor's normal operation green light is lit (if applicable).
2. Test the battery on the thermoanemometer.
3. Record the serial number and calibration date of the thermoanemometer.
4. Raise the fume hood sash about a foot to initiate air flow. Most fume hoods at ISU run continuously; however some models may need to be turned on.
5. Set the thermoanemometer to the LO setting and pull up the flow antennae probe.
6. Place the thermoanemometer within the airflow between the sash and the work-area rim. The arrow on the top of the probe must be turned to match the direction of the air flow.
7. Record fpm readings from at least 5 locations within the air flow. It may be necessary to adjust the height of the sash to obtain fpm values around 100 fpm. If this is necessary, it must be noted and reported to the Director of the Technical Safety Office. Adjustments to the sash height or system repair may be needed.
8. Determine the average face velocity from the measurements.

If an average face velocity of 100 fpm +/- 10 fpm can be obtained while the sash is at an appropriate working height, the fume hood is working properly. If an average face velocity of 100 fpm cannot be attained to within 10% at a suitable working height, the fume hood should be taken out of service until repairs can be made and the proper face velocity is achieved.

In collaboration with facilities services, fume hoods will occasionally be tested, when deemed necessary, using smoke outside the hood sash to ensure that laminar flow conditions are maintained.

#### **REFERENCES**

American Industrial Hygiene Association. 1992. "American National Standard for Laboratory Ventilation." ANSI/AIHA Z9.5 Fairfax, VA.

ORS Laboratory Safety. Chemical Fume Hood Handbook. Northwestern University Office of the Vice President for Research. 2007. Available at: <http://www.research.northwestern.edu/ors/labsafe/hoods/index.htm#>. Accessed 28 January 2008.



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## REVISION TRACKER

Revision 1	September 1, 2008	Original Procedure
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