ANSI/AIHA STANDARD

ANSI/AIHA Z9.5-2012

Laboratory Ventilation

A Publication by
American Industrial Hygiene Association

BY THE ANSI/AIHA Z9.5 SUBCOMMITTEE

ANSI

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Protecting Worker Health

ANSI/AIHA® Z9.5 – 2012
Laboratory Ventilation

Secretariat

American Industrial Hygiene Association

Approved April 26, 2012

American National Standard

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Published by

American Industrial Hygiene Association
3141 Fairview Park Drive, Suite 777, Falls Church, VA 22042
www.aiha.org

Printed in the United States of America.

ISBN 978-1-935082-34-7

Stock Number: LVEA12-437

Contents

Appendices

Foreword (This foreword is not part of the American National Standard Z9.5–2012.)

General coverage. This standard describes required and recommended practices for the design and operation of laboratory ventilation systems used for control of exposure to airborne contaminants. It is intended for use by employers, architects, industrial hygienists, safety engineers, Chemical Hygiene Officers, Environmental Health and Safety Professionals, ventilation system designers, facilities engineers, maintenance personnel, and testing and balance personnel. It is compatible with the ACGIH® *Industrial Ventilation: A Manual of Recommended Practices*, ASHRAE ventilation standards, and other recognized standards of good practice.

HOW TO READ THIS STANDARD. The standard is presented in a two-column format. The left column represents the requirements of the standard as expressed by the use of "shall." The right column provides description and explanation of the requirements and suggested good practices or examples as expressed by the use of "should." Appendices 1 and 2 provide supplementary information on definitions and references. Appendix 3 provides more detailed information on stack design. Appendix 4 provides a sample audit document and Appendix 5 presents a sample table of contents for a Laboratory Ventilation Management Plan.

Flexibility. Requirements should be considered minimum criteria and can be adapted to the needs of the User establishment. It is the intent of the standard to allow and encourage innovation provided the main objective of the standard, "control of exposure to airborne contaminants," is met. Demonstrably equal or better approaches are acceptable. When standard provisions are in conflict, the more stringent applies.

Response and Update. Please contact the standards coordinator at AIHA®, 3141 Fairview Park Drive, Suite 777, Falls Church, VA 22042, if you have questions, comments, or suggestions. As with all ANSI standards, this is a "work in progress." Future versions of the standard will incorporate suggestions and recommendations submitted by its Users and others.

This standard was processed and approved for submittal to ANSI by the Z9 Accredited Standards Committee on Health and Safety Standards for Ventilation Systems. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard the Z9 Committee had the following members:

Thomas Smith, Chair
Theodore Knutson, Vice Chair
David Hicks, Secretariat Representative
At the time of publication, the Secretariat Representative was David Hicks.

Organization Represented	*Name of Representative*
ACGIH®	G. Knutson
ASHRAE	T. Smith
American Foundry Society	R. Scholz
ASSE	P. Osley
Global Finishing Solutions	G. Raifsnider
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S. Gunsel
E. Pomer
N. McManus
D. O'Brien
J. Price
K. Paulson
M. Rollins
J. Sheehy

Subcommittee Z9.5 on Laboratory Ventilation, which developed this standard, had the following members:

Steve Crooks, Chair
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L. DiBerardinis
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D.J. Burton
D. Hitchings
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J.M. Price
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R.A. (Bob) Henry
M. Tschida
C.J. McAfee
R.A. DeLuca
P. Pinkston
K. Kretchman
S. Lengerich
P. Carpenter (Technical Resource)
A. Kolesnikov (Observer)

* retired during the standard's development

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* Contributing member of Z9.5 subcommittee but not a voting member of the full Z9 Committee at the time of standard approval.

American National Standard for Laboratory Ventilation

Requirements of the Standard

Clarification and Explanation of the Requirements

1 Scope, Application and Purpose

1.1 Scope and Application

This standard applies to the ventilation in most laboratories and is written for all laboratory ventilation stakeholders. An emphasis is placed on those with legal responsibilities and liability for providing a safe laboratory. However, users/operators, industrial hygienists, other safety and environmental professionals will also find the standard written for their needs.

Laboratories conduct teaching, research, quality control, and related activities and should satisfy several general objectives, in addition to being suited for the intended use they should

- be energy efficient without sacrificing safety, compliance, or space condition requirements,
- be safe places to work,
- comply with environmental, health, and safety regulations, and
- meet any necessary criteria for the occupants and technology involved in terms of control of temperature, humidity, and air quality.

The standard cannot establish strict liability in all cases but does attempt to fix accountability in many relationships that exist with its context. Please note that such relationships are defined throughout the standard and generally encompass the following: administration - occupant; employer - employee; management - staff; owner - occupant; owner - tenant; teacher - student; designer - owner, etc.

This standard does not apply to the following types of laboratories or hoods except as it may relate to general laboratory ventilation:

- animal facilities,
- biosafety cabinets,
- explosives laboratories,
- high containment facilities (e.g., BSL 3, BSL 4, facilities operating under “chemical surety plans,” etc.),
- laminar flow hoods and isolators (e.g., a clean bench for product protection, not employee protection), and
- radioisotope laboratories.

Appendix 2 offers several references providing information, guidelines or specific requirements for

- laboratory animals – AAALAC,
- biosafety cabinets – NSF,
- biohazardous materials – ABSA, and CDC,
- flammables, pyrophoric and explosives – NFPA, ISEE, and IMC,
- high containment facilities – CDC, ISPE, and USAMRICD,
- laminar flow hoods and isolators – NSF and CETA,
- radioactive materials – NRC, and
- special environmental requirements for product protection such as contamination control from particulates – CETA and IEST.

General laboratory safety practices are not included except where they may relate to the ventilation system’s proper function or effectiveness.

This standard does not apply to comfort considerations unless they have an effect on contaminant control ventilation.