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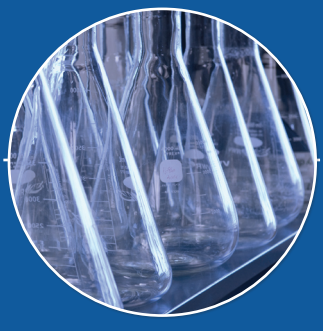
NSF/ANSI 49 - 2009

Biosafety Cabinetry: Design, Construction, Performance, and Field Certification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American National Standard
for Biosafety Cabinetry –

Biosafety Cabinetry: Design, Construction, Performance, and Field Certification

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Foreword[2]

The purpose of this Standard is to establish minimum requirements for materials, design, construction, and performance of Biosafety Cabinetry that are designed to protect personnel, product, and the environment. This Standard details requirements for performance testing as well as field certification testing.

This edition of the Standard (NSF/ANSI 49-2009) includes the following revisions:

Annex G
This informational annex was updated to include a revised decontamination protocol. Input from the 2009 Joint Committee meeting for this annex will be included in the next publication.

Issue 15 – Aerosol Introduction Point
The purpose of the ballot was to add a listing process for aerosol introduction point information.

Issue 28 – Illustrations
This ballot updated the illustrations in various places throughout the standard.

Issue 30 – Biological versus Biosafety
Throughout the standard, the terms were harmonized to list only biosafety cabinetry.

Issue 34 – Acceptance Statements
The purpose of this ballot is to correct the acceptance statements in Annex F for consistency with Annex A.

Issue 35
The purpose of this ballot is to add the definition of w.g. to the standard; to update the UL reference throughout the standard where necessary; and to correct the referenced year in the first paragraph of F.1.

Issue 36- Plenum Design
The purpose of this ballot is to update Section 5.4 on plenum design to match the definition for a type A1 cabinet as in the 2008 version of NSF/ANSI 49.

This Standard was developed by the NSF Joint Committee on Biosafety Cabinetry using the consensus process described by the American National Standards Institute.

Suggestions for improvement of this Standard are welcome. Comments should be sent to Chair, Joint Committee on Biosafety Cabinetry, c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

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NSF/ANSI International Standard for Biosafety Cabinetry —

Biosafety Cabinetry: Design, Construction, Performance, and Field Certification

1 General

1.1 Scope

This Standard applies to Class II (laminar flow) biosafety cabinetry designed to minimize hazards inherent in work with agents assigned to biosafety levels 1, 2, 3, or 4. It also defines the tests that shall be passed by such cabinetry to meet this Standard. This Standard includes basic requirements for the design, construction, and performance of biosafety cabinets that are intended to provide personnel, product, and environmental protection; reliable operation; durability and structural stability; cleanability; limitations on noise level; illumination; vibration; and motor/blower performance.

1.2 Minimum requirements

Cabinets qualifying under this Standard shall have passed all of the designated tests. Units with component parts covered under existing NSF standards or criteria shall conform to those applicable requirements.

1.3 Variations in design and construction

Cabinetry varying in design, construction, or installation of accessory equipment may qualify under this Standard, if appropriate tests and investigations indicate that the equipment is durable and reliable, can be cleaned and decontaminated, and performs in conformance to this Standard. Such equipment shall meet the requirements for materials and finishes in this Standard.

Major modifications require appropriate tests for conformance. Major modifications include, but are not limited to, changes in the following: location or capacity or quantity or all three of blower/motor(s); size or design or both of air plenums; position of High Efficiency Particulate Air (HEPA) filters; position or redesign of work surface; work area intake and exhaust air grilles; window placement or design; access opening size; location and size of exhaust port; and built-in accessory equipment (centrifuges, ultraviolet lighting, supports for intravenous drug container, arm rests, etc.). Relocation of utility service equipment (electrical outlets, petcocks, etc.) is not considered a major modification if other provisions of this Standard are not compromised.

2 Normative references

The following documents contain requirements that, by reference in this text, constitute requirements of this Standard. At the time of publication, the indicated editions were valid. All documents are subject to revision, and parties are encouraged to investigate the possibility of applying the most recent editions of the documents indicated below.

ACGIH, Industrial Ventilation, A Manual of Recommended Practice[3]

[3] American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Dr., Cincinnati, OH 45240 www.acgih.org

ANSI 226.1 – *Test No. 17*[4]

ANSI/NFPA 70, 1999, National Electrical Code[5]

APHA, Compendium of Methods for Microbiological Examination of Foods, 1976 (Spore staining techniques)[6]

APHA, *Standard Methods for the Examination of Water and Wastewater*, Seventeenth Edition (Standard dilution plate methods)[6]

ASHRAE, Standard 111-2008 Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems[7]

IES, Illuminating Engineering Society Lighting Handbook[8]

IEST-RP-CC-001, Recommended Practice for HEPA Filters[8]

IEST-RP-CC007, Testing ULPA Filters[8]

IEST-RP-CC-013, Institute of Environmental Sciences Recommended Practice, Tentative, August, 1986[9]

IEST-RP-CC021,Testing HEPA and ULPA Filter Media[8]

MIL-F-51079B, Filters, Particulate, High Efficiency, Fire Resistant, Biological Use[10]

NIOSH, Department of Health and Human Services (DHHS) reports in "Hazard Review of Bis(chloromethyl)ether (BCME)[11]

OSHA Regulations, Code of Federal Regulations, Title 29, December 6, 1991, *OSHA Bloodborne Pathogen Standard: 1910.100*[12]

UL Standard 94[13]

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[4] American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036 www.ansi.org

[5] National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269 www.nfpa.org

[6] American Public Health Association, 800 I Street, NW, Washington, DC 20001 www.apha.org

[7] American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 1791 Tullie Circle, N. E. Atlanta, GA 30329 www.ashrae.org

[8] Illuminating Engineering Society, 345 E. 47th St., New York, NY 10017 www.iesna.org

[9] Institute of Environmental Sciences and Technology, 5005 Newport Drive, Suite 506, Rolling Meadows, IL 60008-1699 www.iest.org

[10] U. S. Department of Defense, Navy Publishing and Printing Service Office, 700 Robins Ave., Philadelphia, PA 19111-5094 www.defenselink.mil/pubs/

[11] NIOSH, Department of Health and Human Services (DHHS), Publications Office, 4676 Columbia Pkwy., Cincinnati, OH 45226 www.cdc.gov/niosh/

[12] Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402 www.gpo.gov

[13] Underwriters Laboratories, 333 Pfingsten Rd., Northbrook, IL 60062-2096 www.ul.com