



ANSI/AIHA Z9.10-2010

# Fundamentals Governing the Design and Operation of Dilution Ventilation Systems in Industrial Occupancies

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American Industrial Hygiene Association*



BY THE ANSI/AIHA Z9.10 Subcommittee



**ANSI/AIHA® Z9.10–2010**

**American National Standard —  
Fundamentals Governing the Design  
and Operation of Dilution Ventilation  
Systems in Industrial Occupancies**

Secretariat

**American Industrial Hygiene Association®**

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This is a preview of "ANSI/AIHA Z9.10-2010". [Click here to purchase the full version from the ANSI store.](#)

**FOREWORD** (This foreword is not part of the American National Standard/AIHA Z9.10–2010)

This standard describes fundamental good practices related to the commissioning, design, selection, installation, operation, maintenance, and testing of dilution ventilation (DV) or general exhaust ventilation (GEV) systems used for the control of employee exposure to airborne contaminants.

It is intended for use by individuals who have involvement in the design, installation, operation and maintenance of DV/GEV system; such individuals may include owners, employers, industrial hygienists, facility engineers, maintenance personnel, testing and balancing personnel, ventilation system designers, and other with responsibility for such systems.

It is thought to be compatible with related and recognized and standards of good practice.

The standard is presented in a two column format. The left column presents the requirements of the standard; the right column provides clarification and explanation of the requirements plus “*how to comply*” information. The Appendix provides supplementary information by Standard section number. The letter "(A)" at the end of a section or paragraph designates an Appendix entry for that section or paragraph.

Standard requirements should be considered minimum criteria and can be adapted to the needs of the User establishment. Demonstrably equal or better approaches are acceptable. When deviating from the Standard, documentation should be provided. The Standard is auditable by those trained in local exhaust ventilation. An Audit Form is provided in the Appendix.

*Overlap.* For Sections to be mutually exclusive and to stand alone, similar requirements may be stated in more than one section of the Standard.

*Flexibility.* Requirements are minimum criteria and can be adapted to the needs of the User. Demonstrably equal or better approaches are acceptable.

Where standard provisions are in conflict with other standards and codes, the more stringent should be applied. Where the User deviates from the Standard's requirements, the User should document justification for the deviation.

*Auditing.* The Standard is auditable. An Audit Form is provided in the Appendix.

Suggestions for improvement of this standard are welcome. The Committee will carefully consider all comments and suggestions. Comments should be sent to Attn: Scientific and Technical Initiatives, AIHA®, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031.

The Z9 Accredited Standards Committee on Health and Safety Standards for Ventilation Systems prepared, processed, and approved this Standard for submittal to ANSI. Committee approval of the Standard does not necessarily imply unanimity among all members of the Committee. At the time of approval, the Z9 Committee had the following members:

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# American National Standard — Fundamentals Governing the Design and Operation of Dilution Ventilation Systems in Industrial Occupancies

## Requirements of the Standard

### 1. Scope

1.1 Scope. This Standard establishes minimum requirements for the commissioning, design, specification, construction, installation, management, operation, maintenance, and testing of dilution ventilation systems (including demand dilution ventilation) used for the reduction, prevention, and control of employee exposure to harmful airborne substances in the industrial environment. The Standard establishes minimum requirements to provide safe and healthful working conditions in industrial employee occupancies.

1.2 Exclusions. The Standard does not cover:

- o ventilation used exclusively for comfort
- o HVAC and dilution ventilation systems used in non-industrial employee occupancies
- o ventilation of laboratories
- o LEV systems
- o displacement ventilation systems

1.3 Conflicts with other Standards and Codes.

Where Standard provisions may be in conflict with building codes or other recognized standards, the more stringent should be applied.

## Explanatory Materials

### 1. Scope

1.1 Properly operating dilution ventilation systems are used to maintain acceptable air quality in the industrial occupational work environment through dilution and removal of air contaminants.

The standard also applies to supply and makeup air systems where the makeup air is used for dilution.

The standard also applies to supplied-air islands and similar ventilation systems where the supply air is also used for dilution.

Employee comfort is a secondary factor in the standard.

1.2 Exclusions.

LEV systems are covered in ANSI/AIHA® Z9.2–2006. Lab ventilation systems are covered in ANSI/AIHA® Z9.5–2003.

HVAC and dilution ventilation systems for non-industrial employee occupancies are covered in current versions of other standards and guidelines, e.g., ASHRAE 62 and the AIHA® guideline, *Recommendations for the Management, Operation, Testing, and Maintenance of HVAC Systems*.