ANSI/ASSE Z9.10 – 2017
Fundamentals Governing the Design and Operation of Dilution Ventilation Systems in Industrial Occupancies
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American National Standard

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

Secretariat

American Society of Safety Engineers
520 N. Northwest Highway
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Approved February 17, 2017

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Foreword  (This Foreword is not a part of American National Standard Z9.10-2017.)

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, safety professionals, facility engineers, maintenance personnel, testing and balancing personnel, ventilation system designers and others with responsibility for such systems.

It is thought to be compatible with related and recognized standards of good practice. Where incompatibilities are found, use the more stringent or more correct version.

General Coverage. The standard describes recommended practices for the management, operation, testing and maintenance of dilution ventilation systems used for control of employee exposures to airborne contaminants, alone or in conjunction with local exhaust ventilation systems.

The standard covers industrial employee occupancies such as foundry operations, semiconductor manufacturing facilities, welding operations and any other industrial process where employees are present.

Format. 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 the OH&S sciences as well as in design, operation and maintenance of industrial ventilation systems. 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 or correct should be applied. Where the user deviates from the standard's requirements, the user should document justification for the deviation.

Response and Update. Suggestions for improvement of this standard are welcome. The Committee will carefully consider all comments and suggestions. Comments should be sent to the Z9 Secretariat, American Society of Safety Engineers, 520 N. Northwest Highway, Park Ridge, Illinois 60068.

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:
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American Industrial Hygiene Association
American Society of Safety Engineers

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1. SCOPE AND EXCLUSIONS

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 concentrations of airborne substances in the industrial environment. The standard establishes minimum DV requirements to provide safe and healthful working conditions in industrial employee occupancies.

1.2 Exclusions. This standard does not cover:

- ventilation used exclusively for commercial buildings and/or comfort ventilation
- HVAC and dilution ventilation systems used in non-industrial employee occupancies
- Laboratory ventilation
- LEV systems
- displacement ventilation systems
- natural dilution ventilation systems (A)
- dilution used exclusively for fire protection (A)
- systems used exclusively for heat removal and heat stress control

1.3 Conflicts with Other Standards and Codes. Where standard provisions may be in conflict with building codes or other

E1.1 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 LEV 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.

E1.2 LEV systems are covered in ANSI/ASSE Z9.2. Laboratory ventilation systems are covered in ANSI/ASSE Z9.5. See Appendix A2 for addresses.

HVAC and dilution ventilation systems for comfort and non-industrial employee occupancies are covered in current versions of other standards and guidelines, e.g., ASHRAE 62 and AIHA’s guideline, Recommendations for the Management, Operation, Testing and Maintenance of HVAC Systems. See Appendix A1.2 for information on natural ventilation systems and dilution ventilation used to protect against fire hazards.

Information on heat stress can be found at: http://www.cdc.gov/niosh/topics/heatstress/