

ANSI/ASSP Z9.2-2018

Fundamentals Governing the Design and
Operation of Local Exhaust Ventilation Systems



AMERICAN SOCIETY OF
SAFETY PROFESSIONALS



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ANSI/ASSP Z9.2 – 2018

American National Standard

**Fundamentals Governing
the Design and Operation of
Local Exhaust Ventilation Systems**

Secretariat

American Society of Safety Professionals
520 N. Northwest Highway
Park Ridge, Illinois 60068

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American National Standards Institute

American National Standard

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Foreword (This Foreword is not a part of American National Standard Z9.2 – 2018.)

This standard describes fundamental good practices related to the commissioning, design, selection, installation, operation, maintenance and testing of local exhaust ventilation (LEV) systems used for the control of employee exposure to airborne contaminants. It is intended for use by LEV system owners, employers, industrial hygienists, facility engineers, maintenance personnel, testing and balancing personnel, ventilation system designers and others with responsibility for LEV systems. It is compatible with the ACGIH *Industrial Ventilation Manual* and other recognized standards of good practice.

A document describing fundamentals of exhaust system design was originally published in 1936. This was formalized by the Z9 Committee under the direction of Knowlton Caplan, and published in 1960, with updates in 1971 and 1979. The 2001 edition, under the direction of D. Jeff Burton, constituted a major revision of that earlier document and was a more performance-based document with a systems orientation that appealed to a wider audience. Much of the previously included technical design detail had been left to other, more thorough and comprehensive sources. This 2018 version is an update of the most recent version published in 2012.

How to Read This Standard

The standard is presented in two-column format. The left column presents the requirements of the standard; the right column provides clarifications, exceptions and explanations of the requirements plus “how to comply” information. Appendix A provides supplementary information by standard section number. The designation “(See Appendix)”, at the end of a section designates an appendix entry for that section and paragraph.

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 Appendix B.

Suggestions for improvement of this standard are welcome. They should be sent to the American Society of Safety Professionals, 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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Contents	SECTION.....	PAGE
	1. Scope and Purpose.....	7
	2. Referenced Standards and Publications.....	8
	2.1 American National Standards.....	8
	2.2 NFPA Standards.....	9
	2.3 Occupational Safety and Health Administration Standards	9
	2.4 Other Recognized Standards and Guidelines of Good Practice	10
	3. Definitions.....	11
	4. General Requirements	16
	5. Plant Layout and Construction	20
	6. Makeup Air Systems	23
	7. Exhaust Hoods.....	26
	8. Ductwork and Stacks.....	31
	9. Air Cleaning Equipment	35
	10. Fans and Air Moving Devices	37
	11. Management of LEV Systems.....	40
	12. Commissioning.....	41
	13. Operation and Maintenance.....	43
	14. Testing, Balancing and Operational Checks	45
	 Appendices:	
	Appendix A: Commentary on the Standard by Section Number	49
	Appendix B: ANSI/ASSP Z9.2 Audit Form	64

AMERICAN NATIONAL STANDARD Z9.2 FUNDAMENTALS GOVERNING THE DESIGN AND OPERATION OF LOCAL EXHAUST VENTILATION SYSTEMS

STANDARD REQUIREMENTS

EXPLANATORY INFORMATION

*(Not part of American National
Standard Z9.2)*

1. SCOPE AND PURPOSE

1.1 This standard establishes minimum requirements for the commissioning, design, specification, construction and installation of fixed industrial local exhaust ventilation (LEV) systems used for the reduction and prevention of employee exposure to harmful airborne substances in the industrial environment.

E1.1 Local exhaust ventilation is an important engineering control technique for maintaining acceptable air quality in the industrial work environment. Its major approaches are the capture, control or containment of airborne contaminants at or as close as possible to the point of contaminant generation. LEV is often used with other control methods, e.g., isolation, dilution ventilation or personal protective equipment. Properly designed, installed and operated, LEV systems can provide excellent control of airborne contaminants.

1.2 This standard also establishes fundamental requirements for the management, operation, maintenance and testing of LEV systems to assure satisfactory performance over the life of the system.

1.3 This standard also describes basic requirements for replacing air exhausted from the space.

E1.3 Replacement air systems that are improperly designed, installed or operated can impair otherwise acceptable LEV systems.

1.4 This standard does not cover:

- ventilation for comfort;
- air moving systems which are part of an industrial process;
- paint booths not used primarily for employee protection; or
- energy conservation

E1.4 No ventilation standard can provide complete and comprehensive coverage of every application and technical problem encountered when applying LEV systems to the wide range of processes and equipment found in industry. The user should refer to appropriate technical references and publications for further guidance on uses and applications of local exhaust in specific applications (see Appendix).

except when they also impact or apply to airborne contaminant control for employee protection.

1.5 Where standard provisions are in conflict, the more stringent shall apply.

E1.5 Because some sections are written to stand alone, they may duplicate require-