Approved American National Standard

ANSI

ANSI/AIHA Z9.7–2007

American National Standard for

Recirculation of Air from Industrial Process Exhaust Systems

AIHA

Protecting Worker Health

A Publication by
American Industrial Hygiene Association

American National Standard — for the Recirculation of Air from Industrial Process Exhaust Systems

Secretariat

American Industrial Hygiene Association

Approved: January 16, 2007

American National Standards Institute, Inc

American National Standard

Approval of an American National Standard requires verification by ANSI that the requirement for due process, consensus, and other criteria for approval have been met by the standard's developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objection be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary. Their existence does not in any respect preclude anyone, whether he or she has approved the Standards, or not, from manufacturing, marketing, purchasing, or using products, processors, or procedures not conforming to the Standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this Standard no later than five years from the date of approval. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by
American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250
Fairfax, VA 22031
www.aiha.org

Printed in the United States of America.

Stock No: IVEA07-721
ISBN-13: 978-1-931504-79-9

Contents

FOREWORD (This foreword is not part of ANSI/AIHA Z9.7-2007)

Operation of modern industrial facilities calls for increasing efficiency and conservation. Recirculation of general ventilation has become a mainstay of energy conservation, but recirculation of air from industrial process exhaust systems must be carefully considered. The potential for return of toxic contaminants to the facility through recirculation of industrial process air requires that this process be thoroughly analyzed and well-designed.

The Z9.7 subcommittee was chartered to develop guidelines on this specific aspect of industrial ventilation. The following Z9.7 American National Standard is the product of this subcommittee's efforts. It provides guidance on issues to consider whenever industrial process air is recirculated. However, it is not intended to apply to recirculation of building or room air through general HVAC systems.

This standard is not meant to be all-encompassing. Rather, it establishes minimal acceptable criteria for analysis and evaluation of the appropriateness of recirculation of industrial process air, and minimum requirements to assure the safety of affected workers. It is somewhat general in nature. We hope, however, that future versions will continue to expand and amplify these concepts as additional experience is gained. Suggestions for improvement of this standard are welcome. They should be sent to the American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031.

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:

L. DiBerardinis, CIH, CSP, Chair
J. M. Price, CIH, CSP, PE, Vice Chair
Mili Mavely, Secretariat Representative

Organization Represented	*Name of Representative*
Alliance of American Insurers	S. Ecoff
American Chemical Society	D. Walters
American Conference of Governmental Industrial Hygienists	G. Knutson
American Automobile Manufacturers Association	G.M. Adams
American Foundrymen's Society	R. Scholz
American Glovebox Society	S. Crooks
American Society of Heating, Refrigerating, and Air Conditioning Engineers	H.F. Behls
Chemical Industry Institute of Toxicology	J.L. Cook
Massachusetts Institute of Technology	L.J. DiBeradinis
National Association of Metal Finishers	K.C. Hankinson
National Spray Equipment Manufacturers Association	D.R. Scarborough
National Institute of Occupational Safety and Health	J.W. Sheehy
U. S. Department of Labor Occupational Safety and Health Administration	I. Wainless

Individual Members

D. Blackburn	K. Paulson
D.J. Burton	J.M. Price
C. Figueroa	J.C. Rock
S.J. Gunsel	M. Rollins
R.L. Karbowski	T.C. Smith
N. McManus	L.K. Turner
D. O'Brien	

The Z9.7 subcommittee on Recirculation of Air from Industrial Process Exhaust Systems, which developed this standard, had the following members:

G.M. Adams, Chair
L. DiBeradinis
D. O'Brien
K. Paulson
M. Rollins
I. Wainless

American National Standard — for the Recirculation of Air from Industrial Process Exhaust Systems

1. Scope, Purpose, and Application

1.1 Scope

This standard established minimum criteria for the design and operation of a recirculating industrial process exhaust ventilation system used for contaminant control.

1.2 Purpose

The purpose of this standard is to establish minimum guidelines to determine:

— If the air from an industrial process can be passed through an air cleaning device and safely recirculated within the building;

— Appropriate methods and equipment are being used to identify the contaminants generated by an industrial process during normal and upset conditions; and

— Possible health and safety problems that shall be addressed if recirculation is to be used.

1.3 Application

In order to provide a safe and comfortable work environment and reduce the energy required to make up the air exhausted from the building, the contaminated air from process exhaust systems can be cleaned and kept within the building, thereby reducing the amount of additional outside, or make-up air needed.

The recirculation of exhaust air from an industrial process is a potentially dangerous practice. If done improperly, harmful concentrations of air contaminants can be created in the work environment. All aspects of the process, all possible combinations of the base materials, and the materials that can be created during the process shall be researched and documented before recirculation is considered.

The facility owner and manager both must understand that a recirculating process exhaust system requires a higher level of preventive maintenance, including system and component testing, than a conventional process exhaust system for the life of the system.

This standard outlines the minimum criteria that shall be considered in designing a recirculating industrial process exhaust system.

1.4 Exclusions

This standard does not apply to the recirculation of building or room air through general HVAC systems. It also does not apply to general building exhaust units such as propeller fan roof ventilators.

2. Referenced Standards and Publications

2.1 General

The regulations, standards, and guidelines cited in 2.2, 2.3, and 2.4 contain provisions which, through reference in this text, constitute provisions of this American National Standard. The related standards cited in 2.5 contain additional information but are not essential for completing the requirements of this standard.

At this time of publication, the editions indicated were current. All standards and guidelines are subject to revision, and