



Designation: E 1972 – 98

An American National Standard

## Standard Practice for Minimizing Effects of Aerosols in the Wet Metal Removal Environment<sup>1</sup>

This standard is issued under the fixed designation E 1972; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice sets forth guidelines for minimizing effects of aerosols in the wet metal removal environment.

1.2 This practice incorporates all practical means and mechanisms to minimize aerosol generation and to control effects of aerosols in the wet metal removal environment.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

D 1356 Terminology Relating to Sampling and Analysis of Atmospheres<sup>2</sup>

E 1302 Guide for Acute Animal Toxicity Testing of Water-Miscible Metalworking Fluids<sup>2</sup>

E 1370 Guide for Air Sampling Strategies for Worker and Workplace Protection<sup>2</sup>

E 1497 Practice for Safe Use of Water-Miscible Metalworking Fluids<sup>2</sup>

E 1542 Terminology Relating to Occupational Health and Safety<sup>2</sup>

PS 42 Provisional Test Method for Metal Removal Fluid Aerosol in Workplace Atmospheres<sup>2</sup>

#### 2.2 OSHA (US Occupational Safety and Health Administration) Standards:<sup>3</sup>

29 CFR 1910.134 Use of Respiratory in the Workplace

29 CFR 1910.1200 Hazard Communication

#### 2.3 Other Documents:

ANSI Technical Report B11 TR 2–1997, Mist Control Considerations for the Design, Installation and Use of Machine Tools Using Metalworking Fluids<sup>4</sup>

Metal Working Fluid Optimization Guide, National Center for Manufacturing Sciences<sup>5</sup>

Metal Removal Fluids, A Guide To Their Management and Control, Organization Resources Counselors, Inc.<sup>6</sup>

Industrial Ventilation: A Manual of Recommended Practice.<sup>7</sup>

### 3. Terminology

3.1 For definitions and terms relating to this guide, refer to Terminology D 1356 and E 1542.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *dilution ventilation, n*—referring to the supply and exhaust of air with respect to an area, room, or building, the dilution of contaminated air with uncontaminated air for the purpose of controlling potential health hazards, fire and explosion conditions, odors, and nuisance type contaminants, from Industrial Ventilation: A Manual of Recommended Practice.

3.2.2 *extractable mass, n*—the material removed by liquid extraction of the sampling filter using a mixed-polarity solvent mixture as described in Test Method PS 42.

3.2.2.1 *Discussion*—This mass is an approximation of the metal removal fluid portion of the workplace aerosol.

3.2.3 *metal removal fluids, n*—the subset of metalworking fluids that are used for wet machining or grinding to produce the finished part.

3.2.3.1 *Discussion*—Metal removal fluids addressed by this guide include straight or neat oils, not intended for further dilution with water, and soluble oils, semisynthetics, and synthetics, all of which are intended to be diluted with water before use.

3.2.4 *metal removal fluid aerosol, n*—Aerosol generated by operation of the machine tool itself as well as from circulation and filtration systems associated with wet metal removal operations and may include airborne contaminants of a microbial origin.

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee E34 on Occupational Health and Safety and is the direct responsibility of Subcommittee E34.50 on Health and Safety Standards for Metalworking Fluids.

Current edition approved September 10, 1998. Published December 1998.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.03.

<sup>3</sup> Code of Federal Regulations available from United States Government Printing Office, Washington, DC 20402.

<sup>4</sup> Available from Association for Manufacturing Technology, 7901 Westpark Drive, McLean VA 22102.

<sup>5</sup> Available from National Center for Manufacturing Sciences, Report 0274RE95, 3025 Boardwalk, Ann Arbor, MI 48018.

<sup>6</sup> Available from Organization Resources Counselors, 1910 Sunderland Place, NW., Washington, DC 20036 or from members of the Metal Working Fluid Product Stewardship Group (MWFPSG<sup>SM</sup>). Contact Independent Lubricant Manufacturers Association, 651 S. Washington Street, Alexandria, VA 22314, for a list of members of the MWFPSG<sup>SM</sup>.

<sup>7</sup> Available from American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.