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Standard Guide for Selecting Instruments and Methods for Measuring Air Quality In Aircraft Cabins[1]

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1. Scope

1.1 This guide covers information and guidance for the selection of instrumentation and test methods for measuring air quality in aircraft passenger cabins as well as in areas limited to flightcrew access.

1.2 This guide assumes that a list of pollutants to be measured, or analytes of interest, which are present, or may be present, in aircraft cabins is available.

1.3 This guide provides information and guidance to identify levels of concern pertaining to public and occupational exposures to relevant air pollutants. This guide does not address levels of concern, if any, related to degradation of materials or aircraft components because of the presence of air pollutants.

1.4 Based on levels of concern for public and occupational exposures for each pollutant of interest, this guide provides recommendations for developing three aspects of data quality objectives (*a*) detection limit; (*b*) precision; and (*c*) bias.

1.5 This guide summarizes information on technologies for measurement of different groups or classes of air pollutants to provide a basis for selection of instruments and methods. The guide also identifies information resources on types of available measurement systems.

1.6 This guide provides general recommendations for selection of instruments and methods. These recommendations are based on concepts associated with data quality objectives discussed in this guide and the information on available instruments and methods summarized in this guide.

1.7 This guide is specific to chemical contaminants and does not address bioaerosols, which may be present in the cabin environment.

1.8 This guide does not provide details on use or operation of instruments or methods for the measurement of cabin air quality.

1.9 This guide does not provide information on the design of a monitoring strategy, including issues such as frequency of measurement or placement of samplers.

1.10 Users of this guide should be familiar with, or have access to, individuals who have a background in (*a*) use of instruments and methods for measurement of air pollutants and (*b*) principles of toxicology and health-effects of environmental exposure to air pollutants.

1.11 *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:* [2]

D 1356 Terminology Relating to Sampling and Analysis of Atmospheres

D 1914 Practice for Conversion Units and Factors Relating to Atmospheric Analysis

D 3162 Test Method for Carbon Monoxide in the Atmosphere (Continuous Measurement by Nondispersive Infrared Spectrometry)

D 3631 Test Methods for Measuring Atmospheric Pressure

D 4023 Terminology Relating to Humidity Measurements

D 4490 Practice for Measuring the Concentration of Toxic Gases or Vapors Using Detector Tubes

D 4861 Practice for Sampling and Selection of Analytical Techniques for Pesticides and Polychlorinated Biphenyls in Air

D 5149 Test Method for Ozone in the Atmosphere: Continuous Measurement by Ethylene Chemiluminescence

D 5156 Test Methods for Continuous Measurement of Ozone in Ambient, Workplace, and Indoor Atmospheres (Ultraviolet Absorption)

D 5197 Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)

D 5466 Test Method for Determination of Volatile Organic Chemicals in Atmospheres (Canister Sampling Methodology)

[1] This guide is under the jurisdiction of ASTM Committee D22 on Sampling and Analysis of Atmospheres and is the direct responsibility of Subcommittee D22.05 on Indoor Air.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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