
Workplace air — Terminology

Qualité de l'air — Terminologie

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*.

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Introduction

The health of workers in many industries is at risk through exposure by inhalation of chemical and biological agents. Industrial hygienists and other public health professionals need to determine the effectiveness of measures taken to control workers' exposure and this is generally achieved by making workplace air measurements.

Many terms that are commonly used in relation to workplace air measurements and exposure assessments are defined within individual standards or technical documents and are often defined differently from one standard or document to the next. This creates ambiguities and inconsistencies in the use of such terms. This International Standard was developed to ensure that commonly used terms have agreed-upon definitions and to eliminate ambiguities and inconsistencies in their usage. It will be of benefit to agencies concerned with health and safety at work, industrial hygienists and other public health professionals, analytical laboratories, industrial users of metals and metalloids and their workers.

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Workplace air — Terminology

1 Scope

This International Standard specifies terms and definitions that are related to the assessment of workplace exposure (see 2.1.5.1) to chemical and biological agents (see 2.1.1.1). These are either general terms or are specific to physical and chemical processes of air sampling, the analytical method (see 2.3.3), or method performance.

The terms included are those that have been identified as being fundamental because their definition is necessary to avoid ambiguity and ensure consistency of use.

This International Standard is applicable to all International Standards, ISO Technical Reports, ISO Technical Specifications, and ISO Guides related to workplace atmospheres.

2 Terms and definitions

2.1 General terms

2.1.1 Agents

2.1.1.1 biological agent

one of a number of agents such as bacteria, viruses, fungi and other micro-organisms or parts of them and their associated toxins, including those which have been genetically modified, cell cultures or endoparasites which are potentially hazardous to human health

Note 1 to entry: Dusts of organic origin, for example, cotton dust, flour dust and wood dust, are not considered to be biological agents and are therefore not covered by this definition.

[SOURCE: EN 1540:2011, 2.1.1, modified — Added “one of a number of agents such as” to definition and changed “pollen” to “cotton dust”.]

2.1.1.2 chemical agent

chemical element or compound on its own or admixed as it occurs in the natural state or as produced, used, or released, including release as waste, by any work activity, whether or not produced intentionally and whether or not placed on the market

[SOURCE: Council Directive 98/24/EC, Art. 2 a)]

2.1.2 Air pollutants

2.1.2.1 air pollutant

material emitted into the atmosphere either by human activity or natural processes and adversely affecting humans or the environment

[SOURCE: EN 1540:2011, 2.2.1, modified — Changed “man” to “humans”.]

2.1.2.2 airborne dust

finely divided matter, in solid form, dispersed in air

[SOURCE: EN 1540:2011, 2.2.2]

2.1.2.3

airborne particles

fine matter, in solid or liquid form, dispersed in air

[SOURCE: EN 1540:2011, 2.2.3, modified — Note 1 to entry deleted.]

2.1.2.4

total airborne particles

airborne particles (2.1.2.3) present in a given volume of air

[SOURCE: EN 1540:2011, 2.2.6, modified — Added “present” after “particles”.]

2.1.2.5

vapour

gas phase of a substance in a state of equilibrium or disturbed equilibrium with the same substance in a liquid or solid state below its boiling or sublimation point

[SOURCE: EN 1540:2011, 2.2.7]

2.1.3 Health-related fractions and conventions

2.1.3.1

health-related fractions

<airborne particles> collective term for the fractions of *airborne particles* (2.1.2.3) penetrating to different regions of the respiratory tract, i.e. the inhalable, thoracic and respirable fractions

Note 1 to entry: The health-related fractions of airborne particles are specified in ISO 7708.

[SOURCE: EN 1540:2011, 2.3.1, modified — citation in Note 1 to entry changed from EN 481 to ISO 7708.]

2.1.3.1.1

inhalable fraction

mass fraction of *total airborne particles* (2.1.2.4) which is inhaled through the nose and mouth

Note 1 to entry: The inhalable fraction depends on the speed and direction of the air movement, on the rate of breathing and other factors.

[SOURCE: ISO 7708:1995, 2.3]

2.1.3.1.2

extrathoracic fraction

mass fraction of *total airborne particles* (2.1.2.4) which fail to penetrate beyond the larynx

[SOURCE: ISO 7708:1995, 2.5, modified]

2.1.3.1.3

thoracic fraction

mass fraction of *total airborne particles* (2.1.2.4) which penetrate beyond the larynx

[SOURCE: ISO 7708:1995, 2.7, modified]

2.1.3.1.4

respirable fraction

mass fraction of *total airborne particles* (2.1.2.4) which penetrate to the unciliated airways

[SOURCE: ISO 7708:1995, 2.11, modified]

2.1.3.2

sampling convention

target specification for sampling instruments for a specified airborne particulate fraction

2.1.3.2.1**inhalable convention**

target specification for sampling instruments when the *inhalable fraction* ([2.1.3.1.1](#)) is the fraction of interest

[SOURCE: ISO 7708:1995, 2.4]

2.1.3.2.2**extrathoracic convention**

target specification for sampling instruments when the *extrathoracic fraction* ([2.1.3.1.2](#)) is the fraction of interest

[SOURCE: ISO 7708:1995, 2.6, modified — “the fraction” added before “of interest” for consistency of wording.]

2.1.3.2.3**thoracic convention**

target specification for sampling instruments when the *thoracic fraction* ([2.1.3.1.3](#)) is the fraction of interest

[SOURCE: ISO 7708:1995, 2.8, modified — “the fraction” added before “of interest” for consistency of wording.]

2.1.3.2.4**respirable convention**

target specification for sampling instruments when the *respirable fraction* ([2.1.3.1.4](#)) is the fraction of interest

[SOURCE: ISO 7708:1995, 2.12, modified — “the fraction” added before “of interest” for consistency of wording.]

2.1.4 Aerosols**2.1.4.1****aerosol**

airborne particles ([2.1.2.3](#)) and the gas (and vapour) mixture in which they are suspended

Note 1 to entry: The airborne particles can be in or out of equilibrium with their own *vapours* ([2.1.2.5](#)).

[SOURCE: EN 1540:2011, 2.2.4]

2.1.4.2**bioaerosol**

aerosol ([2.1.4.1](#)) consisting of (a) *biological agent(s)* ([2.1.1.1](#))

Note 1 to entry: *Airborne dusts* ([2.1.2.2](#)) of organic origin, for example, cotton dust, flour dust and wood dust, are not considered to be bioaerosols and are therefore not covered by this definition.

[SOURCE: EN 1540:2011, 2.2.5, modified — “pollen” changed to “cotton dust” in Note 1 to entry.]

2.1.4.3**nanoaerosol**

aerosol ([2.1.4.1](#)) comprised of, or consisting of, *nanoparticles* ([2.1.4.4](#)) and *nanostructured particles* ([2.1.4.5](#))

[SOURCE: ISO/TR 27628:2007, 2.11]

2.1.4.4**nanoparticle**

material with all three dimensions in the size range from approximately 1 nm to 100 nm

[SOURCE: ISO/TS 80004-4:2011, 2.1, 2.2, and 2.4, modified]