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Air quality — General aspects — Vocabulary

Qualité de l'air — Aspects généraux — Vocabulaire

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Contents

Page

Foreword

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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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 4, *General aspects*.

This third edition cancels and replaces the second edition (ISO 4225:1994), which has been technically revised. The main changes compared to the previous edition are as follows:

— where appropriate, terms and definitions have been harmonized with ISO 18158:2016;

— obsolete terms have been removed;

— references have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The work programme of ISO/TC 146, Air quality, includes the standardization of procedures for sampling and measurement of gases, vapours and airborne particles. Many terms that are commonly used in relation to air quality, sampling and measurement 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 document 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 air quality, sampling, and laboratory analysis.

The terms given in this document are those in common use. The list should not be considered complete, however, and further terms will be added as the need arises.

Air quality — General aspects — Vocabulary

1 Scope

This document specifies terms and definitions that are related to *air quality* (see 3.1.1.1). These are either general terms or are used in connection with the *sampling* (see 3.3.3.1) and measurement of gases, *vapours* (see 3.1.5.8) and *airborne particles* (see 3.2.2.1) for the determination of air quality.

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.

An alphabetical index of the terms is provided in Annex A.

This document is applicable to all International Standards, ISO Technical Reports, ISO Technical Specifications, and ISO Guides related to air quality.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 General terms

3.1.1 Terms describing air quality

3.1.1.1
air quality
features of the air which have an impact on humans (e.g., safety and health) and/or the environment

Note 1 to entry: Air quality is typically expressed in terms of the presence or absence of *air pollution* (3.2.1.2) (e.g. *emissions* (3.2.1.4) or conversions resulting from emissions, e.g., ozone), using one or more measurements.

Note 2 to entry: The concept of air quality can be used in reference to *ambient air* (3.1.1.3), *indoor air* (3.1.1.5), or *workplace air* (3.1.1.7).

3.1.1.2
air quality standard
specified attribute of the air intended to prevent or minimize impacts on humans (e.g. safety and health) and/or the environment

Note 1 to entry: Air quality standards are frequently defined statistically by setting a limit to the concentration of an *air pollutant* (3.2.1.1) over a specified *averaging time* (3.1.1.9).

Note 2 to entry: Air quality standards can have legal or advisory status in one or more jurisdictions.

3.1.1.3
ambient air
outdoor air to which people, plants, animals or material can be exposed

3.1.1.4
ambient air quality standard
air quality standard (3.1.1.2) for the *ambient air* (3.1.1.3)

3.1.1.5
indoor air
air within an enclosed space, e.g., dwelling or public building

3.1.1.6
indoor air quality standard
air quality standard (3.1.1.2) for the *indoor air* (3.1.1.5)

3.1.1.7
workplace air
air to which a person is exposed, whether indoor or outdoor, during the hours of work at the person's workplace

3.1.1.8
workplace air quality standard
air quality standard (3.1.1.2) for the *workplace air* (3.1.1.7)

3.1.1.9
averaging time
interval of time over which an attribute of *air quality* (3.1.1.1) has been expressed as an average

3.1.2 Agents

3.1.2.1
biological agent
one of a number of agents such as bacteria, viruses, fungi and other micro-organisms or parts of them and their associated allergens or toxins, including those which have been genetically modified, cell cultures or endoparasites which are potentially hazardous to human health

3.1.2.2
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

3.1.3 Terms related to aerosols

3.1.3.1
aerosol
airborne particles (3.2.2.1) and the gas (and *vapour* (3.1.5.8)) mixture in which they are suspended

3.1.3.2
bioaerosol
aerosol (3.1.3.1) consisting of (a) *biological agent(s)* (3.1.2.1)

3.1.3.3
nanoaerosol
aerosol (3.1.3.1) comprised of, or consisting of, *nanoparticles* (3.1.3.4) and *nanostructured particles* (3.1.3.5)

3.1.3.4
nanoparticle
material with all three dimensions in the size range from approximately 1 nm to 100 nm

3.1.3.5
nanostructured particle
particle with structural features smaller than 100 nm, which can influence its physical, chemical and/or biological properties

Note 1 to entry: A nanostructured particle can have a maximum dimension substantially larger than 100 nm.

EXAMPLE A 500 nm diameter *agglomerate* (3.1.3.6) of *nanoparticles* (3.1.3.4) would be considered a nanostructured particle.

3.1.3.6
agglomerate
<aerosols> group of particles held together by relatively weak forces, including van der Waals forces, electrostatic forces and surface tension

3.1.4 Terms related to exposure

3.1.4.1
breathing zone
space around the nose and mouth from which air is inhaled

Note 1 to entry: Technically, the breathing zone corresponds to a hemisphere (generally accepted to be 30 cm in radius) extending in front of the human face, centred on the midpoint of a line joining the ears. The base of the hemisphere is a plane through this line, the top of the head and the larynx. This technical description is not applicable when measuring air within respiratory protective equipment.

3.1.4.2
inhalation exposure
situation in which a *chemical agent* (3.1.2.2) or *biological agent* (3.1.2.1) is present in the air that is inhaled by a person

3.1.4.3
dermal exposure
contact between a *chemical agent* (3.1.2.2) or *biological agent* (3.1.2.1) and human skin

3.1.5 Other terms

3.1.5.1
cyclone
<meteorology> large circulatory wind system around a region of low atmospheric pressure

3.1.5.2
stability
<atmosphere> state of hydrostatic equilibrium of the atmosphere in which a parcel of air moved from its initial level undergoes a hydrostatic force which tends to restore it to this level

3.1.5.3
chimney effect
phenomenon consisting of upwards movement of a localized mass of air or other gases caused by temperature differences

3.1.5.4
effective chimney height
height used for the purposes of calculating the dispersion of emitted gases from a chimney, and which differs from the real chimney height by an amount which depends on such factors as the exit velocity, buoyancy effects and wind speed as well as topography

3.1.5.5
dispersion parameters, Gaussian
parameters which describe the size of an assumed Gaussian *plume* (3.2.1.20) as a function of atmospheric *stability* (3.1.5.2) and travel distance or time

3.1.5.6
lapse rate
variation of an atmospheric parameter with height

Note 1 to entry: The parameter is temperature unless otherwise stated.

Note 2 to entry: This variation is taken as positive when temperature decreases with increasing height. If meteorological conditions are such that the atmospheric lapse rate is the same as that for an adiabatically rising parcel of dry air (about 10 °C km^{-1}), the atmosphere is said to have a dry adiabatic lapse rate.

3.1.5.7
micrometeorology
part of meteorology that deals with observations and processes in the smallest scales of time and space, approximately smaller than 1 km and less than a day (i.e., local processes)

[SOURCE: American Meteorological Society Glossary of Meteorology]

3.1.5.8
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

3.1.5.9
fog
type of *aerosol* (3.1.3.1) consisting of a suspension of *droplets* (3.1.5.12) in air

Note 1 to entry: In meteorology, fog refers to a suspension of water *droplets* (3.1.5.12) resulting in a visibility of less than 1 km.

3.1.5.10
haze
type of *aerosol* (3.1.3.1) consisting of a suspension of extremely small *airborne particles* (3.2.2.1) in air, individually invisible to the naked eye, but which are numerous enough to give the air an appearance of opalescence together with reduced visibility

3.1.5.11
mist
suspension of *droplets* (3.1.5.12) in a gas

Note 1 to entry: A mist reduces visibility to a lesser extent than *fog* (3.1.5.9).

[SOURCE: ISO 29464:2017, 3.2.109]

3.1.5.12
droplet
liquid particle of small mass, capable of remaining in suspension in a gas

Note 1 to entry: In some turbulent systems, for example clouds, the diameter of a droplet can reach 200 µm.

3.1.5.13
particle aerodynamic diameter
aerodynamic diameter
diameter of a sphere of 1 g/cm^3 density with the same terminal settling velocity in calm air as the particle, under the prevailing conditions of temperature, pressure and relative humidity

Note 1 to entry: The particle aerodynamic diameter depends on the size, density and shape of the particle.

Note 2 to entry: Aerodynamic diameter is related to the inertial properties of aerosol particles.

3.1.5.14
equivalent diameter
diameter of a spherical particle which will give behaviour equivalent to that of the particle being examined

[SOURCE: ISO 29464:2017, 3.2.39]

3.1.5.15
rain-out
mechanism by which *airborne particles* (3.2.2.1) in the clouds are removed by the formation of raindrops

Note 1 to entry: Rain-out can also be included as part of *wash-out* (3.1.5.16).

3.1.5.16
wash-out
removal from the atmosphere of gases and sometimes *airborne particles* (3.2.2.1) by their solution in or attachment to raindrops as they fall

Note 1 to entry: Wash-out can include *rain-out* (3.1.5.15).

3.2 Terms related to air pollution and pollution control

3.2.1 Terms generally describing air pollution

3.2.1.1
air pollutant
contaminant
substance emitted into the air either by human activity or natural processes and adversely affecting air quality

3.2.1.2
air pollution
contamination
presence of *air pollutants* (3.2.1.1) in sufficient concentration and for a sufficient time

3.2.1.3
background concentration
portion of the concentration of an *air pollutant* (3.2.1.1) which cannot be directly related to the *sources* (3.2.1.23) under study

Note 1 to entry: The background concentration can be the same as the *natural background concentration* (3.2.1.10) or can include other sources not under study.

3.2.1.4
emission
discharge of substances into the air

Note 1 to entry: The term “emission” is used to describe the discharge and the rate of discharge.

3.2.1.5
emission concentration
concentration of *air pollutant* (3.2.1.1) in an *emission* (3.2.1.4) at its point of discharge

3.2.1.6
emission factor
expression for the ratio of the rate at which an *air pollutant* (3.2.1.1) is emitted as a result of some activity, to the rate of that activity

EXAMPLE Kilograms of sulfur dioxide emitted per tonne of steel produced.