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STANDARD

**7708**

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## **Air quality — Particle size fraction definitions for health-related sampling**

*Qualité de l'air — Définitions des fractions de taille des particules pour  
l'échantillonnage lié aux problèmes de santé*



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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7708 was prepared by Technical Committee ISO/TC 146, *Air quality*.

This first edition cancels and replaces the Technical Report ISO/TR 7708:1983, of which it constitutes a technical revision.

Annexes A, B and C of this International Standard are for information only.

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## Introduction

The fraction of airborne particles which is inhaled into a human body depends on the properties of the particles, the speed and direction of air movement near the body, the rate of breathing, and whether breathing is through the nose or mouth. Inhaled particles can then deposit somewhere in the respiratory tract, or can be exhaled. The site of deposition, or probability of exhalation, depends on the properties of the particles, respiratory tract, breathing pattern and other factors.

Liquid particles or soluble components of solid particles can be absorbed by the tissues wherever they deposit. Particles can cause damage close to the deposition site if they are corrosive, radioactive, or capable of initiating some other type of damage. Insoluble particles can be transported to another part of the respiratory tract or body, where they can be absorbed or cause a biological effect.

There is a wide variation from one person to another in the probability of particle inhalation, deposition, reaction to deposition, and clearance. Nevertheless, it is possible to define conventions for size-selective sampling of airborne particles when the purpose of sampling is health-related. These are relationships between the aerodynamic diameter and the fractions to be collected or measured, which approximate to the fractions penetrating to regions of the respiratory tract under average conditions. Measurement conducted according to these conventions will probably yield a better relationship between measured concentration and risk of disease. For further information on the factors affecting inhalation and deposition and their application in standards, see Stuart et al. [12], Phalen et al. [9], Lippmann et al. [5], Heyder et al. [3], Miller et al. [7], Rudolph et al. [10], Vincent [13], Ogden and Birkett [8] and Soderholm [11].