

	Pracovná expozícia. Hodnotenie pracovných charakteristík zariadení na meranie koncentrácie polietavých častíc. Časť 3: Analýza dát účinnosti odberu vzoriek.	TNI CEN/TR 13205-3 83 3622
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Workplace exposure - Assessment of sampler performance for measurement of airborne particle concentrations - Part 3: Analysis of sampling efficiency data

Táto technická normalizačná informácia obsahuje anglickú verziu CEN/TR 13205-3:2014.

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English Version

**Workplace exposure - Assessment of sampler performance for
measurement of airborne particle concentrations - Part 3:
Analysis of sampling efficiency data**

Exposition sur les lieux de travail - Évaluation des
performances des instruments de mesurage des
concentrations d'aérosols - Partie 3: Analyse des données
d'efficacité de prélèvement

Exposition am Arbeitsplatz - Beurteilung der
Leistungsfähigkeit von Sammlern für die Messung der
Konzentration luftgetragener Partikel - Teil 3: Analyse der
Daten zum Probenahmewirkungsgrad

This Technical Report was approved by CEN on 14 January 2013. It has been drawn up by the Technical Committee CEN/TC 137.

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Foreword

This document (CEN/TR 13205-3:2014) has been prepared by Technical Committee CEN/TC 137 "Assessment of workplace exposure to chemical and biological agents", the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document together with EN 13205-1, EN 13205-2, EN 13205-4, EN 13205-5 and EN 13205-6 supersedes EN 13205:2001.

EN 13205, *Workplace exposure — Assessment of sampler performance for measurement of airborne particle concentrations*, consists of the following parts:

- *Part 1: General requirements;*
- *Part 2: Laboratory performance test based on determination of sampling efficiency;*
- *Part 3: Analysis of sampling efficiency data [Technical Report] (the present document);*
- *Part 4: Laboratory performance test based on comparison of concentrations;*
- *Part 5: Aerosol sampler performance test and sampler comparison carried out at workplaces;*
- *Part 6: Transport and handling tests.*

Introduction

EN 481 defines sampling conventions for the particle size fractions to be collected from workplace atmospheres in order to assess their impact on human health. Conventions are defined for the inhalable, thoracic and respirable aerosol fractions. These conventions represent target specifications for aerosol samplers, giving the ideal sampling efficiency as a function of particle aerodynamic diameter.

In general, the sampling efficiency of real aerosol samplers will deviate from the target specification, and the aerosol mass collected will therefore differ from that which an ideal sampler would collect. In addition, the behaviour of real samplers is influenced by many factors such as external wind speed. In many cases there is an interaction between the influence factors and fraction of the airborne particle size distribution of the environment in which the sampler is used.

This Technical Report presents how data obtained in a type A test (see EN 13205-2) can be analysed in order to calculate the uncertainty components specified in EN 13205-2.

The evaluation method described in this Technical Report shows how to estimate the candidate sampler's sampling efficiency as a function of particle aerodynamic diameter based on the measurement of sampling efficiency values for individual sampler specimen, whether all aspirated particles are part of the sample (as for most inhalable samplers) or if a particle size-dependent penetration occurs between the inlet and the collection substrate (as for thoracic and respirable samplers).

The document shows how various sub-components of sampling errors due non-random and random sources of error can be calculated from measurement data, for example, for individual sampler variability, estimation of sampled concentration and experimental errors.

1 Scope

This Technical Report specifies evaluation methods for analysing the data obtained from a type A test of aerosol samplers under prescribed laboratory conditions as specified in EN 13205-2.

The methods can be applied to all samplers used for the health-related sampling of particles in workplace air.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1540, *Workplace exposure — Terminology*

EN 13205-1:2014, *Workplace exposure — Assessment of sampler performance for measurement of airborne particle concentrations — Part 1: General requirements*

EN 13205-2:2014, *Workplace exposure — Assessment of sampler performance for measurement of airborne particle concentrations — Part 2: Laboratory performance test based on determination of sampling efficiency*

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