

First edition
2022-09

Workplace air — Chemical agent present as a mixture of airborne particles and vapour — Requirements for evaluation of measuring procedures using samplers

Air des lieux de travail — Agent chimique présent sous forme de mélange de particules en suspension dans l'air et de vapeur — Exigences d'évaluation des procédures de mesure utilisant des dispositifs de prélèvement



Reference number
ISO 23861:2022(E)

© ISO 2022



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of ISO 23861:2022. Click [here](#) to purchase the full version from the ANSI store.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	2
5 Sampler types	3
6 Requirements	3
6.1 General.....	3
6.2 Sampler requirements.....	3
6.2.1 General.....	3
6.2.2 Flow resistance and stability of the air flow.....	3
6.2.3 Connecting parts.....	3
6.2.4 Pumps.....	4
6.3 Measuring procedure requirements.....	4
6.3.1 Sampling procedure requirements.....	4
6.3.2 Analytical procedure requirements.....	4
6.3.3 Expanded uncertainty.....	6
6.3.4 Method description.....	6
7 General test conditions	6
7.1 Reagents.....	6
7.2 Apparatus.....	6
8 Test methods	6
8.1 Spiking method.....	6
8.1.1 General.....	6
8.1.2 Deposit of the analyte on the first collection substrate.....	6
8.1.3 Deposit of the analyte on the other collection substrates of a type A sampler.....	7
8.1.4 Transfer of the analyte.....	7
8.2 Evaluation of measuring procedures.....	8
8.2.1 General.....	8
8.2.2 Storage after sampling.....	8
8.3 Uncertainty of the measurement.....	9
8.3.1 Calculation of the combined standard uncertainty.....	9
8.3.2 Calculation of the expanded uncertainty.....	9
9 Test report	9
Annex A (informative) Physical behaviour of a mixture of airborne particles and vapour	10
Annex B (informative) Possible approaches to sample mixtures of airborne particles and vapour	14
Annex C (informative) Estimation of uncertainty of measurement	17
Bibliography	20

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 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 2, *Workplace atmospheres*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 137, *Assessment of workplace exposure to chemical and biological agents*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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.

This is a preview of ISO 23861:2022. [Click here to purchase the full version from the ANSI store.](#)

Introduction

This document provides a framework for assessing the performance of procedures for measuring a chemical agent present as a mixture of airborne particles and vapour against the general requirements for the performance of procedures for measuring chemical agents in workplace atmospheres as specified in ISO 20581.

This document enables manufacturers, users of samplers, developers and users of procedures for measuring a chemical agent present as a mixture of airborne particles and vapour to adopt a consistent approach to method validation.

This document is based on EN 13936.