
Zrak na delovnem mestu – Določevanje živega srebra in anorganskih spojin z živim srebrom - Metoda atomske absorpcijske spektrometrije s hladnimi parami ali z atomsko fluorescenčno spektrometijo

Workplace air -- Determination of mercury and inorganic mercury compounds - Method by cold-vapour atomic absorption spectrometry or atomic fluorescence spectrometry

**Workplace air — Determination of
mercury and inorganic mercury
compounds — Method by cold-vapour
atomic absorption spectrometry or
atomic fluorescence spectrometry**

*Air des lieux de travail — Détermination du mercure et des composés
minéraux de mercure — Méthode par spectrométrie d'absorption
atomique ou spectrométrie de fluorescence atomique de la vapeur
froide*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 General definitions	2
3.2 Particle size fraction definitions	3
3.3 Sampling definitions	4
3.4 Analytical definitions	5
3.5 Statistical terms	6
4 Principle	7
5 Interferences	8
6 Requirement	8
7 Reagents	8
8 Apparatus	10
8.1 Sampling equipment for diffusive sampling	10
8.2 Sampling equipment for pumped sampling	11
8.3 Laboratory apparatus	14
8.4 Analytical instrumentation	15
9 Occupational exposure assessment	20
9.1 General	20
9.2 Personal sampling	20
9.3 Static (area) sampling	20
9.4 Selection of measurement conditions and measurement pattern	21
10 Sampling	22
10.1 Selection of sampling method	22
10.2 Consideration of temperature and pressure effects	22
10.3 Diffusive sampling	23
10.4 Pumped sampling	25
11 Analysis	29
11.1 General	29
11.2 Cleaning of glassware and plasticsware	29
11.3 Preparation of blank, sample and calibration solutions for analysis of diffusive badges	30
11.4 Preparation of blank, sample and calibration solutions for analysis of pumped samples	31
11.5 Instrumental analysis	33
11.6 Estimation of detection and quantification limits	36
11.7 Quality control	37
11.8 Measurement uncertainty	38
12 Expression of results	38
12.1 Calculation of the volume of air samples	38
12.2 Calculation of mercury in air concentrations	39
13 Method performance	39
13.1 General	39
13.2 Detection and quantification limits	39
13.3 Upper limits of the analytical range	40

13.4	Blank values.....	40
13.5	Bias and precision.....	41
13.6	Overall uncertainty of sampling and analysis methods.....	41
13.7	Effects on sampler performance	42
13.8	Sample uptake rate and sampling capacity of diffusive badges.....	43
13.9	Collection efficiency, breakthrough volume and sampling capacity of sorbent tubes	43
13.10	Storage stability.....	43
13.11	Mechanical strength.....	43
13.12	Interferences	44
14	Test report.....	44
14.1	Test record	44
14.2	Laboratory report	45
Annex A (informative) Guidance on selection of a sampling method for mercury vapour.....		46
Annex B (informative) Temperature and pressure corrections		47
Bibliography.....		49

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 17733 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*.

Introduction

The health of workers in many industries is at risk through exposure by inhalation of mercury and inorganic mercury compounds. 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. This International Standard presents a method for making valid exposure measurements for mercury and inorganic mercury compounds in use in industry. 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 mercury and inorganic mercury compounds and their workers, etc.

The procedure described in this International Standard is based upon a method published by the United Kingdom Health and Safety Executive^[1], which was developed after a thorough review of sampling and analysis techniques available for determination of mercury and inorganic mercury compounds in air^[2]. This procedure has been fully validated and the resulting back-up data are freely available^{[3],[4]}. Similar methods have been published by the United States Occupational Safety and Health Administration (OSHA)^{[5],[6]} and the United States National Institute of Occupational Safety and Health (NIOSH)^[7].

It has been assumed in the drafting of this International Standard that the execution of its provisions and the interpretation of the results obtained are entrusted to appropriately qualified and experienced people.