

Workplace exposure — Strategy for the evaluation of dermal exposure

ICS 13.100

National foreword

This Published Document is the official English language version of CEN/TR 15278:2006.

Additional information

The responsible BSI committee, EH/2/2, “Air quality — Workplace atmospheres”, wishes to bring to the attention of users of this PD that the measurement principles and sampling strategies described (clauses 3.4.2 and 3.4.3) are not applicable to assess risk from dermal absorption of vapours. Typically, exposure due to dermal absorption of vapours can be assumed to equate to 10 % of inhalation exposure at any given concentration. However, it can reach levels equivalent to 40 % of inhalation exposure for workers operating in high humidity/high temperature (> 30 °C) environments with chemicals that are readily absorbed by the skin.

Risk from dermal exposure to vapours can be particularly significant for workers operating in confined spaces using respiratory apparatus. This risk can be further exacerbated by heavy protective clothing, such as overalls, which can increase the temperature and humidity near the skin.

Where the rate of chemical uptake into the skin is high, biological monitoring (if available) can be used as a check on all routes of exposure including dermal exposure to vapours. Its use should also be considered if the toxicity of the chemical is high, even if the rate of chemical uptake into the skin is expected to be low. Available biological monitoring methods include blood, urine and breath testing. Further information is available in HSE publication “Biological Monitoring in the Workplace”, HSE www.hse.gov.uk.

The UK participation in its preparation was entrusted by Technical Committee EH/2, Air quality, to Subcommittee EH/2/2, Workplace atmospheres, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Summary of pages

This document comprises a front cover, an inside front cover, page i, a blank page, the CEN/TR title page, pages 2 to 21 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 June 2006

© BSI 2006

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a Published Document does not of itself confer immunity from legal obligations.

blank

English Version

Workplace exposure - Strategy for the evaluation of dermal exposure

Exposition sur les lieux de travail - Stratégie pour
l'évaluation de l'exposition dermique

Exposition am Arbeitsplatz - Strategie zur Beurteilung der
Hautbelastung

This Technical Report was approved by CEN on 20 September 2005. It has been drawn up by the Technical Committee CEN/TC 137.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents		Page
Foreword.....		3
Introduction		4
1	Scope	5
2	Terms and definitions	5
3	Assessment of dermal exposure	7
4	Control	11
Annex A (informative) The conceptual model		12
Annex B (informative) Estimation and Assessment of Substance Exposure (EASE).....		14
Annex C (informative) DeRmal Exposure Assessment Method (DREAM).....		16
Annex D (informative) Determinants of dermal exposure		18
Bibliography		20

Foreword

This Technical Report (CEN/TR 15278:2006) 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 shall not be held responsible for identifying any or all such patent rights.

Introduction

Dermal exposure assessment explores the dynamic interaction between environmental contaminants and the skin. In contrast to inhalation exposure assessment, the assessment of dermal exposure remained a nascent field of scientific research and applied occupational hygiene for most of the twentieth century, although multiple fatalities and occupational skin diseases due to dermal exposure have been described in literature.

During the last decade, dermal exposure has received more attention, and one of the important results was the development of a conceptual model for dermal exposure (see [1]). The model systematically describes the transport of contaminant mass from exposure sources to the surface of the skin. The model provides a structure for evaluating dermal exposure both qualitatively and quantitatively.

The purpose of evaluating dermal exposure can differ substantially, as exposure analysis (to give guidance to control), risk assessment, and evaluation of exposure control can all be objectives to undertake assessments. In order to give guidance and to harmonise basic concepts and actions a strategy for evaluation of dermal exposure is proposed.