



EH40/2002

Occupational

Exposure

Limits

Supplement 2003

*Containing revisions to the list
of maximum exposure limits
and occupational exposure
standards in EH40/2002,
for use with the
Control of Substances
Hazardous to Health
Regulations 2002*



**EH40/2002
Occupational
Exposure
Limits
Supplement 2003**

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First published 2003

ISBN 0 7176 2172 3

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**This publication should be read in conjunction
with EH40/2002.**

ISBN 0 7176 2172 3

EH40/2002 and the Supplement 2003 both contain material of different legal status.

Tables 1 and 2 of EH40/2002 and Tables 1a, 2a and 2b of the Supplement 2003 have a special legal status as they are approved by the Health and Safety Commission. The Control of Substances Hazardous to Health Regulations 2002¹ impose requirements by reference to these sections, which are therefore legally binding. Thus if Tables 1 or 2 of EH40/2002, or Tables 1a, 2a and 2b of the Supplement 2003, apply to your work activities, health and safety inspectors will expect you to be complying with these requirements, and will if necessary take appropriate enforcement action.

The remainder of EH40/2002 and the Supplement 2003 is guidance. This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

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● Foreword

This Supplement 2003 has been prepared and published by the Health and Safety Executive (HSE) and revises and supplements EH40/2002. It should be read in conjunction with EH40/2002 which continues to provide the supporting guidance and a list of occupational exposure limits (see 'What new information is in this Supplement' on page 1).

EH40 contains a list of occupational exposure limits for use with the Control of Substances Hazardous to Health Regulations 2002. EH40/2002 contains a description of the limit setting process, technical definitions, and explanatory notes.

EH40 is mostly guidance, but does contain sections of special legal status. Notes are included in Tables 1 and 2 of EH40/2002 and in Tables 1a, 2a and 2b of the Supplement 2003, to indicate which sections have been formally approved by the Health and Safety Commission (HSC) and are statutory.

● Introduction

Will there be an EH40/2003?

HSE is not publishing an EH40/2003. Instead EH40/2002 remains current; the Supplement 2003 provides amendments to the maximum exposure limits (MELs) and occupational exposure standards (OESs) listed in Tables 1 and 2 of EH40/2002.

The reason for not producing a full 2003 edition of EH40 is that HSE and HSC's Advisory Committee on Toxic Substances (ACTS) are currently developing an entirely new occupational exposure limit (OEL) system, with implementation envisaged for mid-late 2004. An HSC discussion document on this subject *Discussion document on occupational exposure limits (OEL) framework* (DDE19) was published in March 2002 (<http://www.hse.gov.uk/consult/disdocs/dde19.htm>); and subject to approval by HSC a further consultation document (CD) *A consultative document on proposals to introduce a new occupational exposure limits (OEL) framework* will be published in autumn 2003.

This will explain HSC's proposals in detail, and include proposals for transferring existing OESs and MELs into the new framework. The CD will be your opportunity to comment on HSC's proposals. It will be published on the HSE website at <http://www.hse.gov.uk/consult/index.htm>

During this transitional phase ACTS endorsed a proposal from HSE not to publish a complete annual edition of EH40.

Copies of EH40/2002 (supplied together with the Supplement 2003) continue to be available from HSE Books ISBN 0 7176 2083 2, price £10.50. Individual copies of this Supplement 2003 are also available from HSE Books ISBN 0 7176 2172 3, price £3.00.

HSE is aware that EH40/2002 contains some factual and typographic errors, such as incorrect health risk (R-) phrases shown against some substances in Tables 1 and 2. It is not within the scope of this Supplement to correct such inaccuracies. If you are

seeking information on R-phrases for particular substances you should consult the *Approved supply list* (ASL)² and not EH40/2002.

What new information is in this Supplement?

The Supplement 2003 provides updates to Tables 1-3 of EH40/2002. It provides details of new, amended and withdrawn occupational exposure limits (OELs) agreed by HSC on 14 January 2003 and 8 April 2003. Unchanged OELs do not appear in the Supplement. **It is therefore essential that the Supplement 2003 is read in conjunction with EH40/2002 which continues to provide the supporting guidance.** You may wish to use the information in the Supplement to manually amend your copy of EH40/2002.

Tables 1a, 1b, 2a, 2b, and 3a in the Supplement 2003 include:

- new MELs for Benzene, Chloroethane, Hydroquinone, Manganese (and its inorganic compounds) and Vinyl chloride;
- a list of 16 OESs that have been withdrawn;
- amendments to the note attached to the OES for *p*-Phenylenediamine and the scope of the OES for metalworking fluids;
- a list of 15 current MELs that ACTS propose should be reviewed as part of the transition to a new OEL framework; and
- new biological monitoring guidance values (BMGVs) for Cyclohexanone, Glycerol trinitrate (Nitroglycerin) and Xylene (o-, m-, p- and mixed isomers).

HSE would welcome your views on the Supplement 2003. Please write to:

International Chemicals Unit (CFPD 6), HSE,
7th Floor North Wing, Rose Court, 2
Southwark Bridge, London SE1 9HS.

● Maximum exposure limits

Table 1a: List of approved new maximum exposure limits

This list is legally binding, as it reproduces a list of new MELs which have been approved by HSC. The MELs for these substances are in addition to, or in replacement of, those listed in Table 1 of EH40/2002; this Table should therefore be read in conjunction with Table 1 of EH40/2002 (pages 7-10) which lists MELs for other substances. The limits are given in ppm and mg.m⁻³. The conversion method is given on page 50 of EH40/2002. The Control of Substances Hazardous to Health Regulations 2002 (COSHH) impose requirements by reference to this list and the list in Table 1 of EH40/2002.

The entries in the columns headed 'CAS Number, Notes, MDHS and Health R-phrases' are not part of the approved list of MELs.

Substance	CAS Number	Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		Notes	MDHS	Health R-phrases (in ASL ²)
		ppm	mg.m ⁻³	ppm	mg.m ⁻³			
Benzene*	71-43-2	1	-	-	-	Sk, BOELV	60,72,80,88,96	R45,48/23/24/25
Chloroethane†	75-00-3	50	-	-	-		96	R40
Hydroquinone†	123-31-9	-	0.5	-	-		98	R40,22,41,43,68
Manganese and its inorganic compounds†	7439-96-5 and others	-	0.5	-	-		91	
Vinyl chloride**	75-01-04	3	-	-	-	BOELV	80,88,96	R45

* Comes into force on 27 June 2003. Prior to this date the MEL for Benzene is 3 ppm (8-hour TWA).

† Consulted upon through HSE Consultation Document *Control of Substances Hazardous to Health Regulations 1999. Proposals for maximum exposure limits and occupational exposure standards* CD182 (published 7 March 2002) <http://www.hse.gov.uk/consult/condocs/cd182.htm>

** Came into force on 11 November 2002 (see COSHH Approved Code of Practice, Appendix 1, Annex 2³).

Table 1b: List of maximum exposure limits proposed for review as part of the transition to a new occupational exposure limit framework

As part of the development of a new OEL framework, ACTS reviewed the status of all the OELs in EH40 (see page 1 of this Supplement). For the MELs listed below, ACTS concluded that, with improvements in control technology, it should be reasonably practicable to control many of these substances to a lower value. Employers should take this into account in considering their duty to reduce exposure so far as is reasonably practicable and in any case below the MEL. The Consultative Document on the new OEL framework is expected to propose that these limits should be transferred to the new framework and reviewed over time, so fulfilling one of the aims of the new framework - that it should only contain scientifically robust limits. **Table 1b should be read in conjunction with Table 1 of EH40/2002 (pages 7-10) which lists the MELs for these substances.**

<i>Substance</i>
Acrylonitrile
Arsenic and compounds except arsine (as As)
Buta-1,3-diene
Carbon disulphide
Dichloromethane
2-Ethoxyethanol
Formaldehyde
Hardwood dust
Isocyanates, all (as -NCO)
MMMF (Machine-made mineral fibre)
Rubber process dust
Silica, respirable crystalline*
Softwood dust
Styrene
Trichloroethylene

* See Chemical hazard alert notice No 35 (CHAN 35) available free on HSE's website at: <http://www.hse.gov.uk/pubns/chan35.htm>

● Occupational exposure standards

Table 2a: List of withdrawn occupational exposure standards

The substances listed in this table no longer have a legally binding occupational exposure standard (OES). You may wish to delete them from your copy of EH40/2002 (Table 2, pages 11-28). Your duty to control exposure to protect employees remains, see paragraph 126 of the COSHH Approved Code of Practice.³ HSE has issued a chemical hazard alert notice (CHAN*) for a number of these substances to help you. These provide straightforward information on the health effects associated with exposure and simple advice on good practice which employers will find helpful in considering what they need to do as required by COSHH. **Table 2a should be read in conjunction with Table 2 of EH40/2002 which lists all the remaining OESs.**

Substance	CAS Number	Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		Page No in Table 2 of EH40/2002	CHAN No*
		ppm	mg.m ⁻³	ppm	mg.m ⁻³		
Allyl-2,3-epoxypropyl ether	106-92-3	5	24	10	47	12	-
Bis(2,3-epoxypropyl) ether	2238-07-5	0.1	0.54	-	-	13	-
n-Butyl glycidyl ether (BGE)	2426-08-6	25	135	-	-	13	-
Dichlorvos (ISO)	62-73-7	0.1	0.92	0.3	2.8	16	-
Divinylbenzene	1321-74-0	10	54	-	-	18	32
2,3-Epoxypropyl isopropyl ether	4016-14-2	50	241	75	362	18	-
Ethylene dinitrate	628-96-6	0.2	1.3	0.2	1.3	18	31
Furfuryl alcohol	98-00-0	5	20	15	61	18	33
Glycerol trinitrate	55-63-0	0.2	1.9	0.2	1.9	19	30
Nitrogen dioxide	10102-44-0	3	5.7	5	9.6	22	29
Nitrogen monoxide	10102-43-9	25	31	35	44	22	28
Phenyl-2,3-epoxypropyl ether	122-60-1	1	6.2	-	-	23	-
Propylene dinitrate	6423-43-4	0.2	1.4	0.2	1.4	24	36
Subtilisins (proteolytic enzymes as 100% pure crystalline enzyme)	-	-	0.00006	-	0.00006	26	24
Sulphur dioxide	7446-09-5	2	5.3	5	13	26	34
Sulphuric acid	7664-93-9	-	1	-	-	26	25

* Chemical hazard alert notices (CHANs) are available free on HSE's website, the index can be found at: <http://www.hse.gov.uk/pubns/chindex.htm>

The withdrawal of the OESs listed in Table 2a have been approved by HSC. The proposal to withdraw some of these limits was consulted upon through HSE consultation document *Control of Substances Hazardous to Health Regulations 1999. Proposals for maximum exposure limits and occupational exposure standards* CD182 (published 7 March 2002) <http://www.hse.gov.uk/consult/condocs/cd182.htm>. The process by which the remainder of these OESs were withdrawn is summarised in HSC paper *Proposal to withdraw nine OESs* HSC/03/46, considered by HSC on 8 April 2003, available via the HSE website at: <http://www.hse.gov.uk/aboutus/hsc/meetings/index.htm>

Table 2b: List of approved amendments to occupational exposure standards

This list is legally binding, as it reproduces a list of amendments to occupational exposure standards (OESs) that have been approved by HSC. **This Table should be read in conjunction with Table 2 of EH40/2002 which you may wish to amend accordingly.** The Control of Substances Hazardous to Health Regulations 2002 (COSHH) impose requirements by reference to this list and the list in Table 2 of EH40/2002. The entries under the columns headed 'CAS Number and Notes' are not part of the approved list.

		<i>Long-term exposure limit (8-hour TWA reference period)</i>		<i>Short-term exposure limit (15-minute reference period)</i>			
Substance	CAS Number	ppm	mg.m⁻³	ppm	mg.m⁻³	Notes	Amendment to OES listed in EH40/2002*
Oil mist, mineral (excluding metalworking fluids)	See page 32, EH40/2002	-	5	-	10		Limit value unchanged, however metalworking fluids are now excluded from the OES (page 23, EH40/2002) [†]
p-Phenylenediamine	106-50-3	-	0.1	-	-	Sk	Limit value unchanged, however skin notation introduced (page 23, EH40/2002)

* The amendments to OESs in Table 2b were consulted upon through HSE consultation document *Control of Substances Hazardous to Health Regulations 1999. Proposals for maximum exposure limits and occupational exposure standards* CD182 (published 7 March 2002) <http://www.hse.gov.uk/consult/condocs/cd182.htm>

[†] A duty to control exposure to metalworking fluids remains; see paragraphs 126 and 132 of the COSHH Approved Code of Practice.³ Detailed guidance is available in the publication *Working safely with metalworking fluids*.⁴

● Biological monitoring guidance values

Table 3a: List of new biological monitoring guidance values

The framework for the use of biological monitoring and setting of biological monitoring guidance values (BMGVs) is detailed in EH40/2002 (Part 3, page 57, paragraphs 35-37). **This Table should be read in conjunction with Table 3 of EH40/2002.** The BMGVs in Table 3a of this Supplement are **in addition** to those in Table 3 of EH40/2002 (page 29).

<i>Substance</i>	<i>Biological monitoring guidance values</i>			
	<i>Health guidance value*</i>	<i>Sampling time</i>	<i>Benchmark guidance value*</i>	<i>Sampling time</i>
Cyclohexanone	2 mmol cyclohexanol/mol creatinine in urine	Post shift		
Glycerol trinitrate [†] (Nitroglycerin)			15 µmol total nitroglycols/mol creatinine in urine	At the end of the period of exposure. This may be mid-shift or at the end of a shift
Xylene, o-, m-, p- or mixed isomers	650 mmol methyl hippuric acid/mol creatinine in urine	Post shift		

* See notes on page 29 of EH40/2002.

† The BMGV for glycerol trinitrate is not accompanied by an OEL. This is because dermal exposure is likely to be the main route of occupational exposure to this substance and a BMGV is therefore considered to be of more practical use for monitoring occupational exposure than an OEL. This BMGV provides a benchmark against which to assess the effectiveness of control measures. However, it is considered that some workers may still experience headaches and other symptoms at this benchmark value. Employers should look for ways of improving work practices and control measures to keep levels below the Benchmark BMGV as far as possible. For more information see CHAN 30, <http://www.hse.gov.uk/pubns/chan30.htm>

References

(HSE Books unless otherwise stated)

- 1 *Control of Substances Hazardous to Health Regulations 2002* (SI 2002/2677)
The Stationery Office
- 2 *Approved supply list. Information approved for the classification and labelling of substances and preparations dangerous for supply. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. Approved list* L129 (Seventh edition) 2002
ISBN 0 7176 2368 8
- 3 *Control of substances hazardous to health. Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance* L5 (Fourth edition) 2002
ISBN 0 7176 2534 6
- 4 *Working safely with metalworking fluids: Pack 2002* ISBN 0 7176 2561 3

Further reading

COSHH essentials: Easy steps to control chemicals. Control of Substances Hazardous to Health Regulations HSG193 1999
ISBN 0 7176 2421 8
(an electronic version is available on <http://www.coshh-essentials.org.uk/>)

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.



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