



safe work australia

Hazardous Substances Information System - Guidance Material for Exposure Standards Data

1	Introduction	2
2	Hazardous Substances Information System (HSIS)	2
3	The Basis for Exposure Standards	2
4	Interpretation	3
5	Column Headings and Abbreviations	4
6	Footnotes	6
7	Reference Documents	7

1 Introduction

This guidance material provides:

- a guide to the source of the data in the HSIS exposure standard data set
- an explanation of the basis for exposure standards and interpretation
- a guide to the terminology and notes used in the exposure standards data set within HSIS

This guidance material has been developed for use within HSIS and should be read in conjunction with Safe Work Australia's *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:3008(1995)]¹. A link to the guidance note is available from the Search Exposure Standards page in HSIS.

2 Hazardous Substances Information System (HSIS)

The Hazardous Substances Information System (HSIS) is an internet database that allows you to find information on hazardous substances that have been classified in accordance with the *Approved Criteria for Classifying Hazardous Substances 3rd Edition* [NOHSC:1008(2004)]² and/or have National Exposure Standards declared under the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³ and subsequent updates.

HSIS provides searchable access to two data sets, one for hazardous substance information and the other for exposure standard information. The data for substances that are common to both data sets are linked.

The exposure standards data set contains records from the following sources:

- *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³
- Substances with National Exposure Standards declared under the fast-track system (Source A Updates, Batches 1, 2 and 3) and other declared changes since the publication of the 1995 hardcopy of the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³.

3 The Basis for Exposure Standards

Information in this section has been adapted for HSIS from the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³.

Substances listed in the HSIS exposure standards data set have exposure standards based on health effects for most workers. However, there are a number of instances where other considerations, such as, economic, social or technological implications, or sampling and analytical limitations, have also been taken into account, especially for those substances with the notation 'A*' in the Reference column. No standard should be applied without reference to the related documentation.

Documentation for the majority of substances can be found in the American Conference of Governmental Industrial Hygienists' (ACGIH) documentation of the threshold limit values and biological exposure indices.^{4,5} An 'H' in the Reference column of the adopted National Exposure Standards indicates that the reader should refer to the ACGIH documentation for further information. Entries carrying the notation 'A' in the final column of the list of adopted National Exposure Standards, have been reviewed in detail by the Exposure Standards Expert Working Group and documentation supporting the adopted national is available through HSIS.

Partial documentation is provided where the major part of the adopted exposure standard is supported by the documentation of the ACGIH but the adopted national standard differs from that recommended by the ACGIH in one or more details.

The notation 'R' in the final column of the list of exposure standards indicates those substances which require further review by the Exposure Standards Expert Working Group (see Appendix 3 of Safe Work Australia's *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:3008(1995)]¹). In most cases the ACGIH documentation^{4,5} should be consulted for these substances.

The notation 'Ch' in the Reference column of the list of adopted exposure standards indicates those substances for which the Exposure Standards Expert Working Group has proposed additions/changes to the existing standards.

Proposed changes or additions to Safe Work Australia's *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³ have been published separately. Documents are available on the Safe Work Australia website.

The list of synonyms, which appears as Appendix 4 of Safe Work Australia's *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:3008(1995)]¹, should be consulted if the required substances cannot be identified in the list based on accepted chemical names.

4 Interpretation

Information in this section has been adapted for HSIS from the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³.

In the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]³:

'Exposure standard' means an airborne concentration of a particular substance in the worker's breathing zone, exposure to which, according to current knowledge, should not cause adverse health effects nor cause undue discomfort to nearly all workers. The exposure standard can be of three forms; time-weighted average (TWA), peak limitation, or short term exposure limit (STEL).

'Exposure standard - peak' means a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.

'Exposure standard - short term exposure limit (STEL)' means a 15 minute TWA exposure which should not be exceeded at any time during a working day even if the eight-hour TWA average is within the TWA exposure standard. Exposures at the STEL

should not be longer than 15 minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL.

'**Exposure standard - time-weighted average (TWA)**' means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.

5 Column Headings and Abbreviations

The column headings and abbreviations that appear in the exposure standards data set within HSIS are explained in this section.

Chapter, section and appendix numbers refer to the relevant parts of the *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:3008(1995)]¹.

Standard name

The description of the atmospheric contaminant
(see Section 19.2-3)

Synonym

Alternate name/s for the substance.

CAS No

Chemical Abstracts Service Registry Number
(see Section 19.4-19.6)

TWA

Exposure standard - time weighted average
(see Chapters 5 and 6)

ppm

Parts of vapour or gas per million
parts of contaminated air by volume
(see Section 19.7)

mg/m³

Milligrams of substance per cubic
metre of air at 25°C and one
atmosphere pressure. When entry is
in this column only, the value is exact:
when listed with a ppm value, it is
approximate. (see Section 19.7-8).

f/mL

Fibres per millilitre of air as
determined by the membrane filter
method [6.7](#)

P

Prohibition recommended (see
Chapter 3)

STEL

Exposure standard - short term exposure limit.

Where the words 'peak limitation' appear in this column the exposure standard - peak should be applied to the value listed in Column 3. (see Chapter 6)

ppm and mg/m³

(see above)

Carcinogen Category**1**

Established human carcinogen
(see Chapter 13)

2

Probable human carcinogen
(see Chapter 13)

3

Substances suspected of having carcinogenic potential
(see Chapter 13)

Notices

Indicates whether the contaminant can be absorbed through the skin and/or is a sensitiser.

Sk

Absorption through the skin may be a significant source of exposure (see Chapter 11)

Sen

Sensitiser
(see Chapter 12)

Ref

Reference - Indicates the source of documentation, whether the standard is under review or whether a change to the standard has been proposed.

A

NOHSC documentation available for these values.

A*

NOHSC documentation available for these values, see 'Basis for Exposure Standards' earlier in this document

A(t)

Partial documentation is provided where the major part of the proposed exposure standard is supported by the documentation of the ACGIH³ but the proposed national standard differs from that recommended by the ACGIH in one or more details.

Ch

Change to exposure standard has been proposed

H

American Conference of Governmental Industrial Hygienists (ACGIH)^{4,5} is the documentation source

R

Substance requiring review (see Appendix 3)

Notes

References to relevant chapters in the Guidance Note [NOHSC:3008(1995)]¹

6 Footnotes

Explanations of the notations (a) through to (h) that appear after some substance names in the exposure standards records are detailed below. These notations appeared as footnotes within the hardcopy version of the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]².

Notation	Explanation
(a)	This value is for inspirable dust containing no asbestos and < 1% crystalline silica (see Chapter 14)
(b)	Fibres longer than 5µm, width less than 3 µm and with an aspect ratio of not less than 3:1, as measured by the membrane filter method, at 400-650X magnification phase contrast illumination.
(c)	Lint free dust as measured by the vertical elutriator – cotton dust sampler

	described in the <i>Transactions of the National Conference on Cotton Dust and Health 1970</i> , North Carolina University Press, Chapel Hill, pp. 33-43, 1971.
(d)	For a few substances, usually the more potent probable and established human carcinogens, it is not currently possible to assign an appropriate exposure standard. For these substances, exposure should be controlled to the lowest practicable level.
(e)	The Exposure Standards Expert Working Group has recommended guidelines to control short-term excursions above the TWA. The guidelines have been developed based on the toxicokinetic properties of carbon monoxide. A guidance table for the control of short-term excursions above the TWA is available at page 23 of the NOHSC documentation ³ for carbon monoxide.
(f)	For the three substances marked with this footnote (Benomyl, Caprolactam vapour, and Sodium azide), the exposure standards are established as gravimetric (mg/m ³) values and converted into volumetric values (see Section 19.9).
(g)	Containing no asbestos and < 1% crystalline silica (see Chapter 14).
(h)	Documentation for the substances with this footnote can be found in the 5th Edition of the ACGIH documentation of the threshold limit values and biological exposure indices. ⁴ For all other substances with 'H' in Column 7 the documentation can be found in the 6th Edition of the ACGIH documentation of the threshold limit values and biological exposure indices. ⁵

7 Reference Documents

1. National Occupational Health and Safety Commission, 'Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment' [NOHSC:3008(1995)], in *Exposure Standards for Atmospheric Contaminants in the Occupational Environment. Guidance Note and National Exposure Standards*, Australian Government Publishing Service, Canberra, 1995.
2. National Occupational Health and Safety Commission, *Approved Criteria for Classifying Hazardous Substances, 3rd Edition* [NOHSC:1008(2004)], National Occupational Health and Safety Commission, Canberra, 2004.
3. National Occupational Health and Safety Commission, 'Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment' [NOHSC:1003(1995)], in *Exposure Standards for Atmospheric Contaminants in the Occupational Environment. Guidance Note and National Exposure Standards*, Australian Government Publishing Service, Canberra, 1995.
4. American Conference of Governmental Industrial Hygienists (ACGIH), *Documentation of the Threshold Limit Values and Biological Exposure Indices*, 5th Edition, ACGIH, Cincinnati, Ohio, 1986.
5. American Conference of Governmental Industrial Hygienists (ACGIH), *Documentation of the Threshold Limit Values and Biological Exposure Indices*, 6th Edition, ACGIH, Cincinnati, Ohio, 1991.
6. National Occupational Health and Safety Commission, 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust' [NOHSC:3003(1988)],

in *Asbestos: Code of Practice and Guidance Notes*, Australian Government Publishing Service, Canberra, 1988.

7. National Occupational Health and Safety Commission, 'Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres' [NOHSC:3006(1989)], in *Technical Report on Synthetic Mineral Fibres and Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres*, Australian Government Publishing Service, Canberra, 1989.