

ISOOCTYL ALCOHOL

CAS number: 26952-21-6

Synonyms: Isooctanol

Chemical formula: $C_8H_{18}O$

Structural formula: —

Workplace exposure standard (interim)

TWA: 50 ppm (266 mg/m³)

STEL: —

Peak limitation: —

Notations: Sk.

IDLH: —

Sampling and analysis: The recommended value is quantifiable through available sampling and analysis techniques.

Recommendation and basis for workplace exposure standard

An interim TWA of 50 ppm (266 mg/m³) is recommended to protect for upper respiratory tract irritation, polycythaemia (increased number of red blood cells) and organ weight changes in exposed workers.

Given the limited data available from the primary sources, it is recommended that a review of additional sources be conducted at the next scheduled review.

Discussion and conclusions

Isooctyl alcohol is a mixture of closely related isomeric, primary alcohols. It is used as a solvent, chemical intermediate, hydraulic fluid, emulsifier, antifoaming agent and in drying, cutting and lubricating oils.

Critical effects of acute exposure in animals include upper respiratory tract irritation, polycythaemia, and organ weight changes in kidney, liver and spleen (ACGIH 2019; HCOTN 2003). The available toxicological dataset is limited to acute toxicological studies and one sub-chronic animal exposure study, which showed minor systemic and local effects at 112 ppm (600 mg/m³) and spleen weight changes at 21 ppm (110 mg/m³) (HCOTN, 2003). However, this study is not suitable to derive a TWA due to the continuous exposure and limitations of the study. ACGIH (2018) use an acute animal inhalation study at 200 ppm resulting in upper respiratory tract irritation as the basis for deriving a TLV-TWA of 50 ppm; however, no further information is provided.

Based on the limited data available, the existing TWA of 50 ppm (266 mg/m³) is recommended in the interim. An examination of additional data sources is recommended to be prioritised at the next scheduled review of the workplace exposure standards to identify reliable long-term exposure data.

Recommendation for notations

Not classified as a carcinogen according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Not classified as a skin sensitiser or respiratory sensitiser according to the GHS.

A skin notation is recommended based on limited evidence suggesting potential dermal absorption and severe adverse systemic effects in animals.

DRAFT

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	1991	TWA: 50 ppm (266 mg/m³)
ACGIH	2001	TLV-TWA: 50 ppm (266 mg/kg)
TLV-TWA recommended to minimise the risk of upper respiratory tract irritation in exposed workers. Summary of data: Isooctyl alcohol can be a mixture of dimethyl-1-hexanols, methyl-1-hept-anols and other primary alcohols. Human data: • None reported. Animal data: • LD₅₀: 1.48 g/kg (rats, oral) symptoms included CNS depression and laboured respiration • LD₅₀: >2.6 g/kg (rabbits, 24 h, dermal) symptoms included moderate irritation, local necrosis, CNS depression, dyspnoea and ataxia • Percutaneous study in rabbits resulted in anaesthesia and death after moderately short period of skin contact (duration and concentration unknown) • Exposure at 200 ppm (mice, rats, guinea pigs, 6 h, inhalation) symptoms included upper respiratory tract irritation: ○ TLV based on 4 fold reduction to minimise irritation; no derivation information is provided. A skin notation is recommended due to systemic effects from dermal exposure in rabbits. Insufficient data to recommend a sensitiser or carcinogen notation.		
DFG	NA	NA
No report.		
SCOEL	NA	NA
No report.		
OARS/AIHA	NA	NA
No report.		
HCOTN	2003	TWA: 50 ppm (270 mg/m³)
The committee concludes that the present MAC value may be too high. Summary of additional data: • Irritation/sensitisation test involving dermal application in humans of an undiluted solution produced inconclusive results • Exposure at 110, 600 and 3,100 mg/m³ (rats, 24 h/d, 14 d, inhalation):		



Source	Year set	Standard
		3,100 mg/m³: decreased body weight, organ weight changes (kidney, liver, spleen), changes indicative of polycythaemia and acute rhinitis with respiratory epithelial necrosis and squamous metaplasia 600 mg/m³: relative kidney weight changes, changes indicative of polycythaemia and respiratory nasal epithelial squamous metaplasia 110 mg/m³: relative spleen weight changes.

Secondary source reports relied upon

NIL.

Carcinogenicity — non-threshold based genotoxic carcinogens

Is the chemical mutagenic?

Insufficient data

Is the chemical carcinogenic with a mutagenic mechanism of action?

Insufficient data

Insufficient data are available to determine if the chemical is a non-threshold based genotoxic carcinogen.

Notations

Source	Notations
SWA	Skin
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	Skin
DFG	NA
SCOEL	NA
HCOTN	—
IARC	NA
US NIOSH	NA

NA = not applicable (a recommendation has not been made by this Agency); — = the Agency has assessed available data for this chemical but has not recommended any notations



Skin notation assessment

Calculation

Adverse effects in human case study: no
Dermal LD₅₀ ≤1000 mg/kg: no
Dermal repeat-dose NOAEL ≤200 mg/kg:
Dermal LD₅₀/Inhalation LD₅₀ <10:
In vivo dermal absorption rate >10%:
Estimated dermal exposure at WES >10%:

a skin notation is not warranted

IDLH

Is there a suitable IDLH value available? No

Additional information

Molecular weight: 131.24
Conversion factors at 25°C and 101.3 kPa: 1 ppm = Number mg/m³; 1 mg/m³ = Number ppm
This chemical is used as a pesticide: ☐
This chemical is a biological product: ☐
This chemical is a by-product of a process: ☐
A biological exposure index has been recommended by these agencies: ☐ ACGIH ☐ DFG ☐ SCOEL

Workplace exposure standard history

Year	Standard
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References

American Conference of Industrial Hygienists (ACGIH®) (2018) TLVs® and BEIs® with 7th Edition Documentation, CD-ROM, Single User Version. Copyright 2018. Reprinted with permission. See the [TLVs® and BEIs® Guidelines section](#) on the ACGIH website.

Health Council of the Netherlands (HCOTN) (2003) 'Iso-octyl' alcohol (mixed isomers). Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/082.