

CHLOROPICRIN

CAS number: 76-06-2

Synonyms: Nitrochloroform, trichloronitromethane, nitrotrichloromethane, acquinite

Chemical formula: CCl_3NO_2

Structural formula: —

Workplace exposure standard (retained)

TWA: 0.1 ppm (0.67 mg/m³)

STEL: —

Peak limitation: —

Notations: —

IDLH: 2 ppm

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

Recommendation and basis for workplace exposure standard

A TWA of 0.1 ppm (0.67 mg/m³) is recommended to protect for eye and respiratory irritation in exposed workers.

Discussion and conclusions

Chloropicrin is widely used in a range of fumigants, insecticides and fungicides. It was historically used as a war gas and is intensely irritating to the eyes.

Limited toxicological data in humans and animals are available. In humans, individual susceptibility leads to varying results following exposure. Painful irritation to the eyes is reported at 0.3 to 0.37 ppm after three to 30 seconds, while 4 ppm causes incapacity after a few seconds. An acute inhalation study in rats reports congestion, haemorrhage, oedema and death following exposure to 340 ppm for one minute (ACGIH, 2018; DFG, 2000).

Based on the available evidence, the current TWA is considered sufficiently low to protect for the identified critical effects.

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.

There are insufficient data to recommend a skin notation.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	1991	0.1 ppm (0.67 mg/m³)
ACGIH	2001	TLV-TWA: 0.1 ppm (0.67 mg/m³)
TLV- is recommended to minimise the potential for eye and pulmonary irritation and pulmonary oedema Summary of data: Human data: - Painful irritation to the eyes at 0.3–0.37 ppm (3–30 sec) 15 ppm not tolerable by accustomed individuals (≥1 min) 4 ppm reported to make a person unfit for activity (“a few seconds”) 15 ppm for the same period resulted in respiratory tract injury. Animal data: 340 ppm lethal to rats (1 min) - pathological manifestations are congestion, haemorrhage, oedema and infiltration of the lung tissue in early stages of inhalation 78 wk gavage dosing study reported no statistically significant increase of tumour incidence in rats and mice - results inconclusive as most rats did not survive long enough for late-appearing tumours to manifest. Insufficient evidence to recommend a skin or sensitiser notation.		
DFG	2000	MAK: 0.1 ppm (0.68 mg/m³)
The MAK is recommended to protect for strong irritant effects. - No animal studies with long-term inhalation - No modern studies with reliable air analyses were carried out.		
SCOEL	NA	NA
No report.		
OARS/AIHA	NA	NA
No report.		
HCOTN	NA	NA
No report.		

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? No

The chemical is not a non-threshold based genotoxic carcinogen.

Notations

Source	Notations
SWA	NA
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	Carcinogenicity – A4
DFG	NA
SCOEL	NA
HCOTN	NA
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

Insufficient information available.

IDLH

Is there a suitable IDLH value available? Yes

Additional information

Molecular weight:	164.37
Conversion factors at 25°C and 101.3 kPa:	1 ppm = Number mg/m ³ ; 1 mg/m ³ = Number ppm
This chemical is used as a pesticide:	☒
This chemical is a biological product:	☐
This chemical is a by-product of a process:	☐



Molecular weight:	164.37
Conversion factors at 25°C and 101.3 kPa:	1 ppm = Number mg/m ³ ; 1 mg/m ³ = Number ppm
This chemical is used as a pesticide:	✓
A biological exposure index has been recommended by these agencies:	☐ ACGIH ☐ DFG ☐ SCOEL

Workplace exposure standard history

Year	Standard
Click here to enter year	

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.

Deutsche Forschungsgemeinschaft (DFG) (2000) Chlorpikrin (Trichlornitromethan) addendum 2000 – MAK value documentation.

US National Institute for Occupational Safety and Health (NIOSH) (1994) Immediately dangerous to life or health concentrations – chloropicrin.