

CHLOROBROMOMETHANE

CAS number: 74-97-5

Synonyms: Bromochloromethane, CB, CBM, halon 1011, methylene chlorobromide, monochlorobromomethane

Chemical formula: CH₂BrCl

Structural formula: —

Workplace exposure standard (retained)

TWA: 200 ppm (1,060 mg/m³)

STEL: —

Peak limitation: —

Notations: —

IDLH: 2,000 ppm

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

Recommendation and basis for workplace exposure standard

A TWA of 200 ppm (1,060 mg/m³) is recommended to protect for central nervous system (CNS) effects in exposed workers.

Discussion and conclusions

Chlorobromomethane is primarily used as a fire extinguishing fluid with acute exposure expected during use and chronic exposure anticipated during manufacturing and packaging.

Limited robust human toxicological data are available. Case reports in fire fighters describe symptoms of headache, loss of consciousness, gastric upsets, weight loss and slow recovery after acute exposure (ACGIH, 2018). A NOAEC of 370 ppm is reported in rats for liver weight changes and bromide levels in the blood (DFG, 2009). At concentrations of 500 ppm rats and dogs exhibited mild sedation and had elevated bromide levels in serum (ACGIH, 2018).

The liver effects reported in animals were accompanied by normal histopathology and therefore are adaptive changes and not adverse effects relevant for humans. The recommended TWA is considered sufficiently protective for CNS effects reported in humans and animals.

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	TWA: 200 ppm (1,060 mg/m³)
ACGIH	2009	TLV-TWA: 200 ppm (1,060 mg/m³)
<p>TLV-TWA recommended to minimise the potential for central nervous system (CNS) depression in exposed workers.</p> <p>Summary of data:</p> <p>Human data:</p> <ul style="list-style-type: none"> Limited toxicological data presented Acute exposure likely when used as a fire extinguishing agent; chronic exposure expected during manufacturing and packaging Case report of acute poisoning in 3 fire fighters described headaches, loss of consciousness, gastric upsets, weight loss and slow recovery (no further details) Lactational transfer may occur. <p>Animal data:</p> <ul style="list-style-type: none"> LC₅₀: 3,000 ppm (mice, 7 h) Guinea pigs, rabbits, dogs or mice exposed to 500 ppm for 3–7 mo presented no significant histopathological changes Female rats exposed to 370 ppm 7 h/d, 5 d/wk for 28 wk; normal liver histopathology but elevated liver weight Mild sedation exhibited and elevated serum bromide levels in rats and dogs exposed to 500 or 1,000 ppm for 7 h/d, 5 d/wk for 6 mo. <p>Mutagenic in <i>Salmonella typhimurium</i> strains TA100 and TA1535.</p> <p>Insufficient data to recommend carcinogenicity, skin or sensitiser notations.</p>		
DFG	2009	Not assigned
<p>Previous MAK of 200 ppm withdrawn due to genotoxic effects demonstrated in <i>Salmonella typhimurium</i>.</p> <p>Summary of additional data:</p> <ul style="list-style-type: none"> NOAEC of 370 ppm in rats for bromide in blood and liver weight changes Gaseous and liquid forms absorbed dermally (rats) Slight decrease in body weight (rabbits, 24 h) following occlusive dermal exposure of 5,000 mg/kg (rabbits, 24 h) <p>Skin notation assigned as gaseous form is well absorbed through the dermis and liquid form is absorbed following dermal application.</p>		

Source	Year set	Standard
SCOEL	NA	NA
No report.		
OARS/AIHA	NA	NA
No report.		
HCOTN	NA	NA
No report.		

Secondary source reports relied upon

Source	Year	Additional information
US EPA	✓ 1991	No additional information.
US NIOSH	✓ 1994	No additional information.

Carcinogenicity — non-threshold based genotoxic carcinogens

Is the chemical mutagenic? Yes

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	NA
DFG	Carcinogenicity – 3B, H (skin)
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:	129.38
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:	<input type="checkbox"/>
This chemical is a biological product:	<input type="checkbox"/>
This chemical is a by-product of a process:	<input type="checkbox"/>
A biological exposure index has been recommended by these agencies:	<input type="checkbox"/> ACGIH <input type="checkbox"/> DFG <input type="checkbox"/> 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) (2009) Bromochloromethane – MAK value documentation.

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

US Environmental Protection Agency (US EPA) (1991) Bromochloromethane; CASRN 74-97-5 Integrated Risk Information System Chemical Assessment Summary.