# Carbon tetrabromide

| CAS number: | 558-13-4 |
| --- | --- |
| Synonyms: | Tetrabromomethane, methane tetrabromide, carbon bromide |
| Chemical formula: | CBr4 |
| Structural formula: |  |

 Workplace exposure standard (retained)

| TWA: | **0.1 ppm (1.4 mg/m3)**  |
| --- | --- |
| STEL: | **0.3 ppm (4.1 mg/m3)** |
| Peak limitation: | **—** |
|  Notations: | **—** |
| IDLH: | **—** |
| Sampling and analysis: | The recommended value is quantifiable through available sampling and analysis techniques. |

## Recommendation and basis for workplace exposure standard

The TWA of 0.1 ppm and STEL of 0.3 ppm are recommended to protect for irritation of the eyes, skin and upper respiratory tract in exposed workers.

## Discussion and conclusions

Carbon tetrabromide is used as a chemical intermediate in organic synthesis.

Toxicological data are limited and no quantitative data for human exposures are available. Effects reported after acute exposures include upper respiratory irritation and injury to the lungs, liver and kidneys in humans. In a six-month study with rats, guinea pigs and rabbits, no effects are reported following intermittent exposure of 0.3 to 0.5 ppm (ACGIH, 2018; HCOTN, 2004). In a four-month rat study, exposures of 0.07 to 74 ppm for four hours per day resulted in irritation of eyes and respiratory tract (ACGIH, 2018).

Based on the limited information in animals, the current TWA of 0.1 ppm and STEL of 0.3 ppm are retained to prevent irritation in exposed workers.

## 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: 0.1 ppm (1.4 mg/m3); STEL: 0.3 ppm (4.1 mg/m3) |
|  |
| ACGIH 2001 TLV-TWA: 0.1 ppm (1.4 mg/m3); TLV-STEL: 0.3 ppm (4.1 mg/m3) |
| TLV-TWA and TLV-STEL recommended to minimise the potential for lacrimation and ocular, dermal and upper respiratory tract irritation.Summary of data:Human data:* No quantitative exposure data supplied
* Causes lacrimation at low concentrations
* Acute exposures at high concentrations reported to result in upper respiratory irritation and injury to the lungs, liver and kidneys
* Effects from chronic exposure to low concentrations primarily result in liver damage.

Animal data:* Caused severe eye irritation, permanent corneal damage and slight skin irritation in studies with rabbits
* reported corneal damage reversible if material is washed promptly from the eye
* Inhalation study in rats exposed for 7 h/d, 5 d/wk for 6 mo reported no effect at concentrations estimated to be 0.3–0.5 ppm by volume
* Rats exposed to 0.07–74 ppm for 4 h/d for 4 mo reported irritation of the eyes and respiratory tract.

Insufficient data to recommend skin, sensitisation or carcinogenicity notations. |
| DFG NA NA |
| No report. |
| SCOEL NA NA |
| No report. |
| OARS/AIHA NA NA |
| No report. |
| HCOTN 2004 TWA: 0.1 ppm (1.4 mg/m3) |
| Toxicological database is considered insufficient to recommend a health based value.Summary of additional data:* Mild to advanced degenerative changes, cloudy swelling, necrosis, and fatty changes have been observed in the livers of rats after exposure to 4–8 ppm for 1 or 2 wk (no further information)
* 6 mo study with rats, guinea pigs, and rabbits, intermittent exposure to 4–7 mg/m3 (0.3–0.5 ppm) did not induce any effect; considered to be a NOAEL.
 |

### Secondary source reports relied upon

NIL.

### Carcinogenicity — non-threshold based genotoxic carcinogens

| Is the chemical mutagenic? | No |
| --- | --- |
| 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 | — |
| HCIS | — |
| NICNAS | NA |
| EU Annex | NA |
| ECHA | — |
| ACGIH | — |
| 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  |
| --- |
| Insufficient data to assign a skin notation. |

### IDLH

| Is there a suitable IDLH value available? | No |
| --- | --- |

## Additional information

| Molecular weight: | 331.63 |
| --- | --- |
| 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 |
| --- | --- |
| 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*](http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations) on the ACGIH website.

Health Council of the Netherlands (HCOTN) (2004) Carbon tetrabromide. Health-based reassessment of administrative occupational exposure limits. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/114.