DIMETHYL SULFIDE

CAS number: 75-18-3

Synonyms: DMS, methane, thiobis

Chemical formula: C_2H_6S

Structural formula: —

Workplace exposure standard (new)

TWA: **10 ppm (25 mg/m^3)**

STEL: **—**

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

A TWA of 10 ppm (25 mg/m^3) is recommended to protect for general nuisance effects in exposed workers.

Discussion and conclusions

Dimethyl sulfide is an industrial contaminant released from pulp and paper, oil refineries and sewerage treatment plants. Dimethyl sulfide is also produced by bacteria in periodontal pockets and is an intermediary from methionine metabolism. It is found in fragrance formulations and in several food substances, including butter, oil and bread (ACGIH, 2018).

An odour threshold is reported as low as 2.5 ppb (0.0025 mg/m^3). The TWA of 10 ppm (25 mg/m^3) is adopted from the current TLV-TWA assigned by ACGIH (2018). It is recommended based on its low toxicity in acute and repeated exposures in animal studies and an absence of reported effects in low level exposures in occupational studies.

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	***NA***	***NA***
ACGIH	***2004***	***TLV-TWA: 10 ppm (25 mg/m^3)***
TLV-TWA of 10 ppm (25 mg/m^3) recommended due to low level toxicity in acute and repeated exposures in animal studies, lack of genotoxicity and absence of effects in low level exposures in industrial setting. TLV-TWA exceeds odour threshold and may cause nuisance complaints in occupational setting. Summary of data Human data: • Naturally occurring in expired air and produced by bacteria in mouth • Low likelihood of adverse effects at concentrations <0.05 to 14 ppm • Odour detected is as low as 0.0025 mg/m^3 (2.5 ppb) • No toxicity data on exposure to DMS alone. Animal data: • LC_{50}: 40,250 ppm (rats, 4 h) with no mortality ≤24,000 ppm • Single-dose dermal application of 5 g/kg resulted in no mortality ○ oral dose of 500 mg/kg reduced motor activity in mouse by 1/20 of the spontaneous rate • Lung congestion and effects in kidneys (haemorrhagic foci and pyelonephritis) of rabbits after 13 wk exposure to 2% solution in drinking water • No studies on chronic toxicity or carcinogenicity • Negative genotoxicity tests. No skin notation is recommended, and insufficient data available to assign sensitiser and carcinogenicity notations or recommend TLV-STEL.		
DFG	***1975***	***MAK: Not established***
Summary of data Animal data: • LD_{50}: 3,700 mg/kg, (mice) and 3,300 mg/kg (rats); administration type unknown • Inhalation 6 h/d over 6 mo, indicated chronic effects (no further information).		
SCOEL	***NA***	***NA***
No report.		
OARS/AIHA	***NA***	***NA***
No report.		

Source	Year set	Standard
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?	Insufficient data

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

Notations

Source	Notations
SWA	NA
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	—
DFG	—
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 data to assign a skin notation.

IDLH

Is there a suitable IDLH value available?	No

Additional information

Molecular weight:	62.13
Conversion factors at 25°C and 101.3 kPa:	1 ppm = 2.54 mg/m^3; 1 mg/m^3 = 0.39 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* on the ACGIH website.

Deutsche Forschungsgemeinschaft (DFG) (1975) Dimethyl sulfide – MAK value documentation.