DIETHYL PHTHALATE

CAS number: 84-66-2

Synonyms: 1,2-Benzenedicarboxylic acid diethyl ester, DEP, ethyl phthalate, phthalic acid, diethyl ester

Chemical formula: $C_{12}H_{14}O_4$

Structural formula: —

Workplace exposure standard (retained)

TWA: **5 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 5 mg/m^3 is recommended to protect for nasal and upper respiratory tract irritation in exposed workers.

Discussion and conclusions

Diethyl phthalate (DEP) is used in plastic packaging, is present in toiletries and cosmetics, dental impression materials, adhesives, and in food and pharmaceutical packaging.

Limited data in humans exist, but exposure to the heated vapour of DEP is reported to produce transient irritation of the nose and throat. Published data in animals indicates low toxicity. ACGIH (2018) recommends a TLV-TWA of 5 mg/m^3 as an equivalent to that recommended for di(2-ethylhexyl) phthalate.

In the absence of additional information, the current TWA of 5 mg/m^3 is recommended to be retained to protect for possible irritation of the upper respiratory tract. Investigation of additional data sources is recommended at the next scheduled review.

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 not recommended based on the available evidence.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	***1991***	***TWA: 5 mg/m^3***
ACGIH	***2001***	***TLV-TWA: 5 mg/m^3***
TLV-TWA recommended to minimise the potential for nasal and throat irritation. Summary of data: Human data: • Limited data in humans • Exposure to heated vapour of DEP produced transient irritation of the nose and throat; no further information • Worker complaints of pain, numbness, and spasms in the upper and lower extremities after 6 yr ambient air concentrations of 1.7–66 mg/m^3 for range of related plasticisers; co-exposure to tri-o-cresyl phosphate (TOCP) was likely; TOCP is a known potent cause of human peripheral neuropathy. Animal data: • NOEL 1.25 g/kg/d (dog, 6 wk feeding study) • NOEL 625 mg/kg/d (dog, 1 yr feeding study) • LD_{50}: 9.5–31 g/kg (rat, oral); very low acute toxicity • No sign of toxicity in mice via topical application to shaved skin. TLV-TWA is set as an equivalent to that recommended for di(2-ethylhexyl) phthalate (DEHP).		
DFG	***NA***	***NA***
No report.		
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?	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	
Conclusion:	
Adverse effects in human case study:	no
Dermal LD_{50} ≤1000 mg/kg:	no
Dermal repeat-dose NOAEL ≤200 mg/kg:	
Dermal LD_{50}/Inhalation LD_{50} <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:	222.23
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:	☐

Molecular weight:	222.23
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

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