

PHENYLPHOSPHINE

CAS number: 638-21-1

	000 21 1
Synonyms:	Phosphine, phenyl-
Chemical formula:	C ₆ H ₇ P
Structural formula:	_
Workplace expos	sure standard (amended)
TWA:	-
STEL:	-
Peak limitation:	-
Notations:	-
IDLH:	-
Sampling and analysis: N/A	

Recommendation and basis for workplace exposure standard

This chemical has been nominated for removal from the Workplace exposure standards for airborne contaminants due to a lack of evidence that it is used or generated in Australian workplaces or that it presents a potential for legacy exposure. Therefore, a TWA is not recommended.

Discussion and conclusions

Phenylphosphine is used as a chemical reagent and an intermediate. Potential exposures occur when phenylphosphinates are heated above 200°C. There is lack of evidence that this chemical is used or generated in Australian workplaces or that it presents a potential for legacy exposure.

Based on limited animal data, the critical effects of exposure include testicular degeneration, haematological changes (anaemia, decreased haemoglobin and haematocrit) and dermatitis.

The only reported human study involved an odour panel that readily detected the presence of the chemical at 0.57 ppm (2.6 mg/m³), describing the odour as obnoxious (ACGIH, 2018; HCOTN, 2000). A LOAEL of 0.6 ppm for testicular degeneration, haematological effects and dermatitis is reported in animals from a sub-chronic inhalation study (ACGIH, 2018; HCOTN, 2000). ACGIH (2018) considers daily exposures at 2.2 ppm to constitute a frank-effect level and 0.6 ppm the threshold-effect level for systemic toxicity. ACGIH (2018) recommend a peak limitation of 0.05 ppm (0.23 mg/m³). HCOTN (2000) recommend a health-based OEL (HBROEL) of 0.01 ppm (0.05 mg/m³), while an administrative occupational exposure limit (OEL) of 0.05 ppm is currently in place.

This chemical has been nominated for removal from the WES list. A TWA is not recommended.

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

WA 1991 TWA: 0.05 ppm (0.23 mg/m³) (Peak limitation) LV-Ceiling recommended to minimise the potential for reproductive, haematologic or dermatologia nages. Image: Commended to minimise the potential for reproductive, haematologic or dermatologic or dervaluated. 0.57 ppm detected by 3-person odour panel, described as obnoxious; lower concentrations not evaluated. 0.57 ppm (rats); effects included red ears, excessive salivation, lacrimation, face-pawing and dyspnoea; no effects noted in tissue A h LCso of 38 ppm (rats); effects included red ears, excessive salivation, lacrimatin and termatori mouth and feer and increased haematopolesis in spleen in exposed rats decreased weigh gain, mild respriatory irritation, temporay	Source	Year set St	andard			
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o report.	DFG	NA	NA			
	No report.					
COEL NA NA	SCOEL	NA	NA			
o report.	No report.					
DARS/AIHA NA NA	OARS/AIHA	NA	NA			
o report.	No report.					



Source	Year set	Standard
HCOTN	2000	Ceiling limit: 0.05 ppm (0.25 mg/m³)
Summary	of additional data	ι:
• C	urrent administrat	ive OEL
• N fc	o data on expose	d workers, mutagenicity, genotoxicity or carcinogenicity have been
• S	hould be consider	ed very toxic by inhalation
• Lo st	OAEL of 0.6 ppm tarting point for HE ecommended TWA	(from 90-d inhalation study in rats, also cited in ACGIH, 2001) used as 3ROEL. An overall assessment factor of 54 was applied to derive A of 0.01 ppm (0.05 mg/m ³).

Secondary source reports relied upon

Source	Year	Additional information
US NIOSH	2007	• NIOSH REL=ceiling 0.05 ppm (0.25 mg/m ³).

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	NA
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

Insufficient data to assign a skin notation

IDLH

Is there a suitable IDLH value available? No

Additional information

Molecular weight:	110.1
Conversion factors at 25°C and 101.3 kPa:	1 ppm = 4.6 mg/m ³ ; 1 mg/m ³ = 0.22 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:	

Workplace exposure standard history

Click here to enter year	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 <u>TLVs[®] and BEIs[®] Guidelines section</u> on the ACGIH website.

Health Council of the Netherlands (HCOTN) (2000) Phenylphosphine. Health-based Reassessment of Administrative Occupational Exposure Limits. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/013.

US National Institute for Occupational Safety and Health (NIOSH) (2007) NIOSH Pocket Guide To Chemical Hazards – Phenylphospine.