2-AMINOPYRIDINE

CAS number:	504-29-0
Synonyms:	Pyridin-2-amine, α-aminopyridine, α-pyridylamine
Chemical formula:	$C_5H_6N_2$
Structural formula:	

Workplace exposure standard (retained)

TWA:	**0.5 ppm (1.9 mg/m^3)**
STEL:	**—**
Peak limitation:	**—**
Notations:	**Sk.**
IDLH:	**5 ppm (19 mg/m^3)**
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 0.5 ppm (1.9 mg/m^3) is recommended to reduce the potential for headache, dizziness, nausea and related central nervous system (CNS) effects.

Discussion and conclusions

2-Aminopyridine is used primarily in the pharmaceutical industry as an intermediate in chemical synthesis. Very limited data are available for humans and animals. Accidental exposure of a worker to approximately 5.2 ppm for five hours resulted in headache, increased blood pressure, flushing of extremities and nausea. A chemical plant worker died from acute poisoning three and a half hours after an accidental spill. Dermal absorption and vapour inhalation were likely routes of exposure (ACGIH, 2018).

The TWA is recommended after applying an uncertainty factor of 10 to the LOAEL for CNS effects reported after an accidental spill. The recommended TWA is considered protective for these effects and no additional uncertainty factor for an incomplete dataset is necessary. However, a review 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 a respiratory sensitiser according to the GHS.

A skin notation is recommended based on likely skin absorption resulting in systemic effects in a human case report.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	***1991***	***TWA: 0.5 ppm (2 mg/m^3)***
ACGIH	***2001***	***TLV-TWA: 0.5 ppm (1.9 mg/m^3)***

TLV-TWA recommended to minimise the potential for headache, dizziness, nausea and related CNS effects.
Summary of data:
Human data
• Limited human data
• Fatal acute poisoning:
  ○ accidental spill with contaminated clothing left on for 1.5 h
  ○ after 2 h symptoms were dizziness, headache, respiratory distress and convulsions leading to respiratory failure and death
  ○ vapour inhalation and dermal absorption likely
  ○ non-fatal acute poisoning (≈ 5.2 ppm, 5 h) resulted in severe headache, increased blood pressure, flushing of the extremities and nausea; complete recovery within 24 h.
Animal data:
• Limited studies available
• LD_{50}: 28 mg/kg (mice, intraperitoneal)
• LD_{50}: 70 mg/kg (mice, subcutaneous)
• LD_{50}: 23 mg/kg (mice, intravenous)
• LD_{50}: 200 mg/kg (rats, oral)
• LD_{50}: 50 mg/kg (mice, oral).		

DFG	***2000***	***NA***
No MAK value is assigned. No additional information is available.		
SCOEL	***NA***	***NA***
No report		
OARS/AIHA	***NA***	***NA***
No report		
HCOTN	***2002***	***NA***
Toxicological database too limited to justify recommendation of health-based OEL.		

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	—
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	—
DFG	—
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	
Adverse effects in human case study:	yes
Dermal LD_{50} ≤1000 mg/kg:	
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 warranted

IDLH

Is there a suitable IDLH value available?	Yes

Additional information

Molecular weight:	94.12
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:	☐
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) (2000) 2-Aminopyridine – MAK value documentation.

Health Council of the Netherlands (HCOTN) (2002) 2-Aminopyridine. Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2002/23

US National Institute for Occupational Safety and Health (NIOSH) (1994) Immediately dangerous to life or health concentrations – 2-Aminopyridine