

ANTU

CAS number: 86-88-4

Synonyms: Naphthalen-1-ylthiourea, α -Naphthylthiourea, 1-Naphthylthiourea

Chemical formula: $C_{11}H_{10}N_2S$

Structural formula:

Workplace exposure standard (amended)

TWA: —

STEL: —

Peak limitation: —

Notations: Carc. 2

IDLH: 100 mg/m³

Sampling and analysis: The recommended value is readily quantifiable through currently available sampling and analysis techniques.

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

ANTU is primarily a rodenticide with limited data on toxicity available for humans and animals. Poisoning case reports in humans have reported vomiting, dyspnoea, cyanosis and coarse pulmonary rates. ANTU displays varying toxicity in animals with rats and dogs being most susceptible (ACGIH, 2018)

The DFG (2011) have suspended the previous MAK value of 0.3 mg/m³ due to a lack of NOAEL and genotoxic potential. However, the evidence presented was insufficient to conclude whether or not ANTU is a non-threshold based genotoxic carcinogen.

Recommendation for notations

Classified as a category 2 carcinogen according to the Globally Harmonised System of Classification and Labelling on Chemicals (GHS).

Not classified as a skin sensitiser or respiratory sensitiser according to the GHS.

Insufficient evidence to recommend a skin notation.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	1991	TWA: 0.3 mg/m³
ACGIH	2001	TLV-TWA: 0.3 mg/m³
<p>TLV-TWA recommended to minimise the risk for cyanosis, dyspnoea, nausea and vomiting in exposed workers.</p> <p>ANTU is a rodenticide.</p> <p>Summary of data:</p> <p>Limited data in humans and animals presented</p> <p>Human data:</p> <ul style="list-style-type: none"> Lethal dose by ingestion estimated at 4 g/kg Case study involving ingestion of 80 g of rat poison containing 30% ANTU, in addition to large amounts of ethanol, resulted in vomiting, dyspnoea, cyanosis, and coarse (reversible) pulmonary rates. <p>Animal data:</p> <ul style="list-style-type: none"> Varying levels of acute oral toxicity in animals with rats and dogs being the most susceptible Acute LD₅₀: 0.38 mg/kg (dog, oral); 6 mg/kg (rat, oral); 4,250 mg/kg (monkey, oral). <p>Skin notation assigned as workers handling chemically related thiourea compounds showed dermal absorption leading to thyroid effects.</p>		
DFG	2011	NA
<p>Previous MAK of 0.3 mg/m³ suspended as a NOAEL cannot be derived from the existing studies with repeated oral administration and assumed possible genotoxic potential.</p>		
SCOEL	NA	NA
No report		
OARS/AIHA	NA	NA
No report		
HCOTN	NA	NA
No report		

Secondary source reports relied upon

Source	Year	Additional information
IARC	✓ 1987	<ul style="list-style-type: none"> • Mutagenic to <i>Salmonella typhimurium</i> in the presence of an exogenous metabolic activation system • Induced a transformed phenotype in Syrian hamster embryo cells in vitro • Limited evidence of mutagenicity in cellular systems • No data available to evaluate mutagenicity to mammals.

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	Carc. 2
HCIS	Carcinogenicity – category 2
NICNAS	NA
EU Annex	Carcinogenicity – category 2
ECHA	NA
ACGIH	Carcinogenicity – A4; Skin
DFG	Carcinogenicity – 3B; H (skin)
SCOEL	NA
HCOTN	NA
IARC	—
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? Yes

Additional information

Molecular weight:	202.28
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:	<input checked="" type="checkbox"/>
This chemical is a biological product:	<input type="checkbox"/>
This chemical is a by-product of a process:	<input type="checkbox"/>
A biological exposure index has been recommended by these agencies:	<input type="checkbox"/> ACGIH <input type="checkbox"/> DFG <input type="checkbox"/> 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) (2011) alpha-Naphthylthioharnstoff (ANTU) – MAK value documentation (German language)

Tenth Adaptation to Technical Progress Commission Regulation (EU Annex) No 2017/776 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (the CLP Regulation)

International Agency for Research on Cancer (IARC) (1987) ANTU. IARC Monographs on the evaluation of the carcinogenic risk to humans.

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