

CAESIUM HYDROXIDE

CAS number: 21351-79-1

Synonyms: Caesium hydrate, caesium hydroxide dimer, cesium hydroxide

Chemical formula: CsOH

Structural formula:

Workplace exposure standard (interim)

TWA: 2 mg/m³

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

An interim TWA of 2 mg/m³ is recommended to protect for irritation to the eyes, respiratory tract and skin in exposed workers.

Given the limited data available from the primary sources, it is recommended that a review of additional sources be conducted at the next scheduled review.

Discussion and conclusions

Caesium hydroxide is a strong base commonly employed as a polymerisation catalyst in cyclic siloxane production and as an electrolyte in battery and photographic applications.

The critical effects of exposure are caused by its extreme hygroscopicity (water absorption) and high pH, resulting in irritation of the eyes, respiratory tract and skin upon contact (ACGIH, 2018; HCOTN, 2000). Due to the acute nature of the irritation and absence of adequate toxicological data, exposure levels by all routes should be minimised as far as possible (ACGIH, 2018).

It is not possible to recommend health-based WES because of a lack of adequate data. No human exposure data and only acute toxicity animal studies are available (HCOTN, 2000). The recommended interim TWA is the same as the *Administrative OEL* recommended by ACGIH, 2018 and HCOTN, 2000). Given the limited data available from the primary sources, it is recommended that a review of additional sources be conducted 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.

There are insufficient data to recommend a skin notation.

DRAFT

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	Year	TWA: 2 mg/m³
ACGIH	2001	TLV-TWA: 2 mg/m³
<p>TLV-TWA intended to minimise potential for irritation to the eyes, skin and respiratory tract. Insufficient data to recommend a TLV-STEL or carcinogenicity, skin and sensitisation notations. Derivation/experimental basis of TLV-TWA is not discussed.</p> <p>Summary of data:</p> <ul style="list-style-type: none"> • Strong base with extreme hygroscopicity that causes corrosive damage on contact • No human exposure data and very limited animal studies available. <p>Animal data:</p> <ul style="list-style-type: none"> • LD₅₀: 100 mg/kg (rats, intraperitoneal) • LD₅₀: 800 mg/kg (mice, oral), 1,026 mg/kg (rats, oral) • Irritation to eyes and both intact and abraded skin observed with 5% solution (rabbits, duration, solvent and concentration expression not specified) • No evidence of skin sensitisation in guinea pigs (no further information provided). 		
DFG	NA	NA
No report.		
SCOEL	NA	NA
No report.		
OARS/AIHA	NA	NA
No report.		
HCOTN	2000	8 hour TWA: 2 mg/m³
<p>Summary of additional data:</p> <p>Current toxicological data insufficient to recommend a health-based TWA; an administrative OEL is adopted as no health-based exposure standard can be recommended.</p> <p>Only acute animal toxicity data available. Some additional information on data presented in ACGIH, 2001.</p> <p>Animal data:</p> <ul style="list-style-type: none"> • No chronic, mutagenicity or carcinogenicity data available • Caesium hydroxide most toxic inorganic caesium compound in intraperitoneal injection study with rats • Lethal and sub-lethal oral doses in rats caused stomach and intestinal haemorrhage and organ adhesion • Non-irritant to intact skin at 5% (rabbits, solvent and concentration expression not specified) but mild irritant to abraded skin • Extreme eye irritation at 5% (rabbits, concentration expression not specified, 5 min); no effect at 0.5% (24 h). 		

Secondary source reports relied upon

Source	Year	Additional information
HSE	✓ 2002	8-hour TWA: 2 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	—
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	—
DFG	NA
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

Insufficient data to assign a skin notation.

IDLH

Is there a suitable IDLH value available? No



Additional information

Molecular weight:	149.92
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 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.

UK Health and Safety Executive (HSE) (2002) EH40/2005 Workplace exposure limits.

Health Council of the Netherlands (HCOTN) (2000) Cesium hydroxide. Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/001.