# Ammonium chloride (fume)

| CAS number: | 12125-02-9 |
| --- | --- |
| Synonyms: | Salmiac, sal ammoniac |
| Chemical formula: | NH4Cl |
| Structural formula: |  |

Workplace exposure standard (retained)

| TWA: | **10 mg/m3** |
| --- | --- |
| STEL: | **20 mg/m3** |
| Peak limitation: | **—** |
| Notations: | **—** |
| IDLH: | **—** |
| 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 10 mg/m3 and STEL of 20 mg/m3 are recommended to protect for irritation of the eyes and respiratory tract in exposed workers.

## Discussion and conclusions

Ammonium chloride fumes are produced during industrial processes such as galvanising. Limited data are available on adverse effects associated with exposure.

It is an irritant to the eyes and respiratory tract (ACGIH, 2018; HCOTN, 2004). The recommended TWA and STEL are considered protective for these adverse effects.

## 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.

Insufficient data to recommend a skin notation.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 TWA: 10 mg/m3;STEL: 20 mg/m3 | |
|  |
| ACGIH 2001 TLV-TWA: 10 mg/m3;TLV-STEL: 20 mg/m3 |
| TLV-TWA and TLV-STEL recommended to minimise the potential for ocular and respiratory tract irritation.  Summary of data:  Human data:   * Severe eye irritant * Moderately toxic by dermal and inhalation routes of exposure * Poisonous by subcutaneous, intramuscular, and intravenous routes of exposure.   Animal data:   * LD50: 1,650 mg/kg (rat, oral) * LD50: 30 mg/kg (rat, intramuscular) * Mild eye irritation in rabbits after 500 mg instilled for 24 h.   Insufficient data available to recommend skin, sensitisation or carcinogenicity notations. |
| DFG NA NA |
| No report |
| SCOEL NA NA |
| No report |
| OARS/AIHA NA NA |
| No report |
| HCOTN 2004 MAC: 10 mg/m3 |
| The administrative MAC is unlikely to result in systemic effects. However, some local effects on the eyes and respiratory tract may occur.  Summary of data:   * Considers toxicological database on ammonium chloride (fume) poor to justify recommendation of a health-based OEL * Slight catarrhal pneumonia, infiltration of small round cells in lungs and other minor effects (30% mist, 2 h, rabbit) * Negative in *in vitro* bacterial mutation assay and in *in vivo* mouse bone marrow micronucleus test. |

### 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 | — |
| 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 |
| --- |
| |  |  |  |  | | --- | --- | --- | --- | | Adverse effects in human case study: | no |  |  | | Dermal LD50 ≤1000 mg/kg: | no |  |  | | Dermal repeat-dose NOAEL ≤200 mg/kg: |  |  |  | | Dermal LD50/Inhalation LD50 <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: | 53.50 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa: | 1 ppm = Number mg/m3; 1 mg/m3 = 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*](http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations) on the ACGIH website.

Health Council of the Netherlands (HCOTN) (2004) Ammonium chloride (fume). Health-based Reassessment of Administrative Occupational Exposure Limits. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/093.