# 2-Chloropropionic acid

| CAS number: | 598-78-7 |
| --- | --- |
| Synonyms: | alpha-chloropropionic acid,  alpha.-monochloropropionic acid, propanoic acid,  2-chloro-, (.+-.)-, propionic acid, 2-chloro- |
| Chemical formula: | C3H5ClO2 |
| Structural formula: |  |

Workplace exposure standard (retained)

| TWA: | **0.1 ppm (0.44 mg/m3)** |
| --- | --- |
| STEL: | **—** |
| Peak limitation: | **—** |
| Notations: | **Sk.** |
| IDLH: | **—** |
| Sampling and analysis: | The recommended value is quantifiable through available sampling and analysis techniques. |

## Recommendation and basis for workplace exposure standard

A TWA of 0.1 ppm (0.44 mg/m3) is recommended to protect for potential reproductive effects in male workers and possible irritation in exposed workers.

## Discussion and conclusions

2-Chloropropionic acid is used as an intermediate in the agricultural, chemical and pharmaceutical industries.

No human exposure information is available. No data are available for mutagenicity, carcinogenicity, teratogenicity or female reproductive effects. A 38 day repeat dose oral study in rats reported a LOAEL of 78 mg/kg/day for atrophy of the testicular germinal epithelium. This dose is converted to inhalational exposure of 123 ppm when applying generic human exposure factors. A TWA of 0.1 ppm is then derived after applying an uncertainty factor of 1,000 in absence of a NOAEL, the seriousness of the observed effect and lack of inhalational data.

## 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.

A skin notation is recommended based on evidence of dermal absorption in guinea pigs combined with the seriousness of the critical effect.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 TWA: 0.1 ppm (0.44 mg/m3) | |
|  |
| ACGIH 2001 TLV-TWA: 0.1 ppm (0.44 mg/m3) |
| TLV-TWA recommended to minimise the potential reproductive effects and protect for irritation of the eyes, skin and respiratory tract.  Summary of data:  No human data presented.  Animal data:   * LD50: 126–1,258 mg/kg (guinea pigs, dermal) * Repeated oral administration study reported atrophy of the testicular germinal epithelium in rats at the lowest dose tested, 78 mg/kg/d for 38 d * TLV-TWA of 0.1 ppm (rounded) is derived using the oral LOAEL of 78 mg/kg/d and converting it to an inhalational exposure of 546 mg/m3 (123 ppm) for 8 h working shift (assuming 70 kg bw human breathing 10 m3 with 100% absorption) * UF of 1,000 applied in absence of a NOEL, seriousness of observed effect and lack of inhalation data * Negative response in a skin sensitisation test on guinea pigs.   Insufficient data to recommend sensitisation or carcinogen notations or STEL.  No data identified regarding mutagenicity, carcinogenicity, teratogenicity or female reproductive effects. |
| DFG NA NA |
| No report. |
| SCOEL NA NA |
| No report. |
| OARS/AIHA NA NA |
| No report. |
| HCOTN NA NA |
| No report. |

### Secondary source reports relied upon

NIL.

### 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 | Skin |
| 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

| Calculation |
| --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Adverse effects in human case study: |  |  |  |  | | Dermal LD50 ≤1000 mg/kg: | yes | 3.00 |  |  | | Dermal repeat-dose NOAEL ≤200 mg/kg: |  |  |  |  | | Dermal LD50/Inhalation LD50 <10: |  |  |  |  | | *In vivo* dermal absorption rate >10%: |  |  |  |  | | Estimated dermal exposure at WES >10%: |  |  |  |  | |  |  | 3 | **consider assigning a skin notation** | | |

### IDLH

| Is there a suitable IDLH value available? | No |
| --- | --- |

## Additional information

| Molecular weight: | 108.53 |
| --- | --- |
| 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

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