# Crufomate

| CAS number: | 299-86-5 |
| --- | --- |
| Synonyms: | 4-tert-Butyl-2-chlorophenyl N-methyl O-methylphosphoramidate-dowco 132 |
| Chemical formula: | C12H19ClNO3P |

Workplace exposure standard (retained)

| TWA: | **5 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

A TWA of 5 mg/m3 is recommended to protect for inhibition of cholinesterase activity 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

Crufomate is used as an anthelmintic and in the systematic control of grubs, lice and horn flies.

The critical effect associated with exposure is the inhibition of cholinesterase activity. No adequate data regarding inhalation exposure in humans or animals is available. An oral NOEL of 2 mg/kg/day is reported in rats for cholinesterase inhibition (ACGIH, 2018). The recommended TWA is calculated based on the NOEL of 2 mg/kg/day in rats, which is equivalent to 4.6 mg/m3 in humans after applying generic conversion factors.

Given the limited toxicological data, the current TWA of 5 mg/m3 is recommended to be retained and is considered adequate to protect for inhibition of cholinesterase activity in exposed workers. A review of additional data sources is recommended at the next scheduled review, in particular to determine if rats and humans have an equivalent sensitivity to exposure and to identify human studies.

## 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.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 TWA: 5 mg/m3 | |
|  |
| ACGIH 2001 TLV-TWA: 5 mg/m3 |
| TLV-TWA recommended to minimise the potential for cholinergic symptoms due to neuronal cholinesterase inhibition.  Summary of data:  No human data presented.  Animal data:   * LD50: 490–1,000 mg/kg (rabbits, rats, guinea pigs and dogs, oral) * Dermal application of 100% solution to abraded and intact skin of rabbits produced slight erythema; no systematic effects observed * NOEL: 2 mg/kg/d (rats, 2 yr, oral) based on cholinesterase inhibition * NOEL: 1 mg/kg/d (dogs, 2 yr, oral) based on cholinesterase inhibition * No teratogenic of reproductive effect in a 3 generation rat study, rats ingested 5 mg/kg/d.   Assigned an A4, not classified as human carcinogen.  Insufficient data to assign a sensitiser or skin notation. |
| 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 | Carcinogenicity – A4 |
| 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 |
| --- |
| Insufficient data to assign a skin notation. |

### IDLH

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

## Additional information

| Molecular weight: | 291.71 |
| --- | --- |
| 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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