# Tetrasodium pyrophosphate

| CAS number: | 7722-88-5 |
| --- | --- |
| Synonyms: | — |
| Chemical formula: | Na4P2O7 |

 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 kidney effects 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

Tetrasodium pyrophosphate is used in the food industry as an emulsifier and dental industry as a calcium-chelating salt.

The critical effect of exposure is kidney effects.

A NOAEL of 500 mg/kg/day in rats is identified for kidney effects in a 90-day oral study (ECHA, 2011). No further information is available to determine the source of evidence or the critical effects.

Given the absence of available exposure data, the TWA of 5 mg/m3 is recommended to be retained to limit kidney effects based on the sub-chronic rat study. A review of additional data sources is recommended at the next scheduled review to address the absence of chronic 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 not recommended based on the available evidence.

# Appendix

### Primary sources with reports

| Source Year set Standard  |
| --- |
| SWA 1991 TWA: 5 mg/m3 |
|  |
| ACGIH NA NA |
| No report. |
| 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

| Source |  | Year | Additional information |
| --- | --- | --- | --- |
| ECHA |  | 2011 | * LD50: 300−2,000 mg/kg (rats, oral)
* LD50: >2,000 mg/kg (rabbit, dermal)
* Exposure at 250, 500, 1,000 mg/kg/d (rats, 90 d, oral):
* 1,000 mg/kg/d: cortical tubular basophilia of the renal tubule and mineralisation of the kidney
* NOAEL: 500 mg/kg/d.
 |

### 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 | NA |
| 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: | 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** |

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### IDLH

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

## Additional information

| Molecular weight: | 265.9 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa:  | 1 ppm = 10.89 mg/m3; 1 mg/m3 = 0.09 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

European Chemicals Agency (ECHA) (2011) Tetrasodium pyrophosphate – REACH assessment.