TETRASODIUM PYROPHOSPHATE

CAS number: 7722-88-5

Synonyms: —

Chemical formula: $Na_4P_2O_7$

Workplace exposure standard (retained)

TWA: **5 mg/m^3**

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/m^3 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/m^3 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	• LD_{50}: 300–2,000 mg/kg (rats, oral)
			• LD_{50}: >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

Source	Notations
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 LD_{50} ≤1000 mg/kg:	no
Dermal repeat-dose NOAEL ≤200 mg/kg:	
Dermal LD_{50}/Inhalation LD_{50} <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:	265.9
Conversion factors at 25°C and 101.3 kPa:	1 ppm = 10.89 mg/m^3; 1 mg/m^3 = 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.