# SulFur tetrafluoride

| CAS number: | 7783-60-0 |
| --- | --- |
| Synonyms: | Sulphur tetrafluoride |
| Chemical formula: | SF4 |

Workplace exposure standard (interim)

| TWA: | **—** |
| --- | --- |
| STEL: | **—** |
| Peak limitation: | **0.1 ppm (0.44 mg/m3)** |
| Notations: | **—** |
| IDLH: | **—** |
| **Sampling and analysis:** There is uncertainty regarding quantification of the recommended value with available sampling and/or analysis techniques. | |

## Recommendation and basis for workplace exposure standard

A peak limitation of 0.1 ppm (0.44 mg/m3) is recommended to protect for acute ocular and respiratory tract irritation in exposed workers.

## Discussion and conclusions

Sulfur tetrafluoride is primarily used as a fluorinating agent, in water/oil-repellent materials, lubricity improvers and as an intermediate in the manufacture of pesticides.

The critical effects of exposure are ocular and respiratory tract irritation.

Limited data are available from both human and animal studies. Inhalation exposure in rats at 19 ppm over four hours was lethal to one of two subjects, irregular breathing and ocular irritation were observed at this and at lower concentrations (ACGIH 2018). Inhalation exposure at 4 ppm in rats for four hours per day for 10 days resulted in symptoms including dyspnoea, weakness and nasal discharge.

Given the absence of available exposure data, the current peak limitation of 0.1 ppm and occupational exposure levels by ACGIH (2018) and HCOTN (2001) is recommended to be retained in the interim to limit acute ocular and respiratory tract irritation in exposed workers.

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.

There are insufficient data to recommend a skin notation.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 Peak limitation: 0.1 ppm (0.44 mg/m3) | |
|  |
| ACGIH 2001 TLV-Ceiling: 0.1 ppm (0.44 mg/m3) |
| TLV-Ceiling recommended to minimise the risk of ocular and respiratory tract irritation.  Summary of data:  TLV- Ceiling assigned based on definitive injury produced by relatively brief exposures at concentrations as low as 4 ppm.  Human data:   * Accidental workplace exposure to 6 workers for 6 h caused shortness of breath, chest tightness, productive cough, nose and eye irritation, headache, fatigue, nausea and vomiting (concentration unknown): * pulmonary (radiographic) abnormalities observed resolved after 1 yr.   Animal data:   * Exposure at 19 ppm (rats, 4 h, inhalation) lethal to 1/2 animals: * irregular breathing and ocular irritation observed at this and at lower concentrations * Exposure at 4 ppm (rats, 4 h/d, 10 d, inhalation) symptoms included dyspnoea, weakness, nasal discharge and emphysema: * 14 d after exposure animals recovered clinically and had no anatomical lesions at autopsy.   Insufficient data to recommend a skin, sensitiser or carcinogen notation. |
| DFG NA NA |
| No report. |
| SCOEL NA NA |
| No report. |
| OARS/AIHA NA NA |
| No report. |
| HCOTN 2002 Ceiling limit: 0.1 ppm (0.4 mg/m3) |
| The committee considers the toxicological database too poor to justify recommendation of a HBROEL. |

### 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 | — |
| HCIS | NA |
| 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

Insufficient data to assign a skin notation.

### IDLH

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

## Additional information

| Molecular weight: | 108.07 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa: | 1 ppm = 4.42 mg/m3; 1 mg/m3 = 0.226 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) (2002) Sulphur tetrafluoride. Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/039.