

Carbonyl sulfide

463-58-1

Hazard Summary

Carbonyl sulfide is used as an intermediate in organic compound synthesis. Limited information is available on the health effects of carbonyl sulfide. Acute (short-term) inhalation of high concentrations of carbonyl sulfide may cause narcotic effects in humans. Carbonyl sulfide may also irritate the eyes and skin in humans. No information is available on the chronic (long-term), reproductive, developmental, or carcinogenic effects of carbonyl sulfide in humans. EPA has not classified carbonyl sulfide with respect to potential carcinogenicity.

Please Note: The main source of information for this fact sheet is the [Hazardous Substances Data Bank \(HSDB\)](#), a database of summaries of peer-reviewed literature (1).

Uses

- Carbonyl sulfide is used as an intermediate in the synthesis of organic sulfur compounds and alkyl carbonates. (1)

Sources and Potential Exposure

- Occupational exposure to carbonyl sulfide may occur by inhalation during its production and use. (1)
- Carbonyl sulfide may be released to the atmosphere naturally from volcanoes, marshes, soils, and deciduous and coniferous trees. It may also be released to the ambient environment as fugitive emissions from commercial processes and combustion emissions. Anthropogenic emissions have been estimated to be less than one-third of natural emissions. The general population may be exposed to low levels of carbonyl sulfide by the inhalation of ambient air. (1)

Assessing Personal Exposure

- No information was located regarding the measurement of personal exposure to carbonyl sulfide.

Health Hazard Information

Acute Effects:

- Acute inhalation of high concentrations of carbonyl sulfide may cause narcotic effects in humans. (1)
- Carbonyl sulfide may irritate the eyes and skin in humans. (1)

Chronic Effects (Noncancer):

- No information is available on the chronic effects of carbonyl sulfide in humans.
- No significant effects were observed in rabbits chronically exposed to carbonyl sulfide by inhalation. (1)
- EPA has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for carbonyl sulfide. (2)

Reproductive/Developmental Effects:

- No information is available on the reproductive or developmental effects of carbonyl sulfide in humans or animals.

Cancer Risk:

- No information is available on the carcinogenic effects of carbonyl sulfide in humans or animals.
- EPA has not classified carbonyl sulfide with respect to its potential carcinogenicity. (2)

Physical Properties

- The chemical formula for carbonyl sulfide is COS, and its molecular weight is 60.08 g/mol. (1)
- Carbonyl sulfide occurs as a colorless gas. (1)
- Carbonyl sulfide has a typical sulfide odor when pure; the odor threshold has not been established. (1)
- The vapor pressure for carbonyl sulfide is 9412 mm Hg at 25 °C, and its log octanol/water partition coefficient ($\log K_{ow}$) is 0.8009. (1)

Note: There are very few health numbers or regulatory/advisory numbers for carbonyl sulfide; thus, a graph has not been prepared for this compound. The information cited in this factsheet was obtained in December 1999.

Conversion Factors (only for the gaseous form):

To convert concentrations in air (at 25 °C) from ppm to mg/m^3 : $\text{mg}/\text{m}^3 = (\text{ppm}) \times (\text{molecular weight of the compound}) / (24.45)$. For carbonyl sulfide: 1 ppm = 2.46 mg/m^3 .

Summary created in April 1992, updated in January 2000.

References

1. U.S. Department of Health and Human Services. Hazardous Substances Data Bank (HSDB, [online database](#)). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.
 2. U.S. Environmental Protection Agency. [Integrated Risk Information System \(IRIS\) on Carbonyl sulfide](#), National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1999.
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