

Propionaldehyde

123-38-6

Hazard Summary

Propionaldehyde is used in the manufacture of plastics, in the synthesis of rubber chemicals, and as a disinfectant and preservative. Limited information is available on the health effects of propionaldehyde. No information is available on the acute (short-term), chronic (long-term), reproductive, developmental or carcinogenic effects of propionaldehyde in humans. Animal studies have reported that exposure to high levels of propionaldehyde, via inhalation, results in anesthesia and liver damage, and intraperitoneal exposure results in increased blood pressure. EPA has not classified propionaldehyde for carcinogenicity.

Please Note: The main sources of information for this fact sheet are the Hazardous Substances Data Bank (HSDB) (1), a database of summaries of peer-reviewed literature, and the Registry of Toxic Effects of Chemical Substances (RTECS) (2), a database of toxic effects that are not peer reviewed.

Uses

- Propionaldehyde is used in the manufacture of plastics, in the synthesis of rubber chemicals, and as a disinfectant and preservative. (1)

Sources and Potential Exposure

- Exposure to propionaldehyde may occur from ambient air, where it is released from manufacturing facilities, from municipal waste incinerators, and from the combustion of wood, gasoline, diesel fuel, and polyethylenes. (1)
- Tobacco smoke also contains propionaldehyde. (1)
- Propionaldehyde has been detected in drinking water and coffee. (1)
- Occupational exposure to propionaldehyde may occur for those workers involved in the manufacture or use of the chemical. (1)

Assessing Personal Exposure

- No information is available on the measurement of personal exposure to propionaldehyde.

Health Hazard Information

Acute Effects:

- No information is available on the acute effects of propionaldehyde in humans.
- Animal studies have reported that exposure to high levels of propionaldehyde caused anesthesia and liver damage, via inhalation exposure, and increased blood pressure, via intraperitoneal exposure. (1)
- Acute animal tests in rats and mice have shown propionaldehyde to have moderate acute toxicity from inhalation, oral, and dermal exposures. (2)

Chronic Effects (Noncancer):

- No information is available on the chronic effects of propionaldehyde in humans or animals.
- EPA has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for propionaldehyde.

Reproductive/Developmental Effects:

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

Cancer Risk:

- No information is available on the carcinogenic effects of propionaldehyde in humans or animals.
- EPA has not classified propionaldehyde for carcinogenicity.

Physical Properties

- Propionaldehyde is a colorless, flammable liquid with a suffocating fruity odor. (1)
- The odor threshold for propionaldehyde is 1 part per million (ppm). (1)
- The chemical formula for propionaldehyde is C_3H_6O , and the molecular weight is 58.08 g/mol. (1)
- The vapor pressure for propionaldehyde is 317 mm Hg at 25 °C. (1)

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

Conversion Factors:

To convert concentrations in air (at 25 °C) from ppm to mg/m^3 : $mg/m^3 = (ppm) \times (\text{molecular weight of the compound}) / (24.45)$. For propionaldehyde: 1 ppm = 2.37 mg/m^3 .

Summary created in April 1992, updated 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. Department of Health and Human Services. Registry of Toxic Effects of Chemical Substances (RTECS, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.