

Calcium cyanamide

156-62-7

Hazard Summary

Calcium cyanamide is used as a fertilizer, pesticide, and in the manufacture of other chemicals. It is irritating to the eyes, skin, and respiratory tract in humans. Acute (short-term) inhalation exposure may cause gastritis, rhinitis, pharyngitis, laryngitis, and tracheobronchitis. Acute oral exposure may cause a vasomotor reaction, resulting in intense flushing of the face, upper body, and arms. Tachycardia and hypotension have also been observed in humans following acute oral exposure. Chronic (long-term) occupational exposure has been reported to cause chronic rhinitis with perforation of the nasal septum in workers. EPA has not classified calcium cyanamide with respect to potential carcinogenicity.

Please Note: The main sources of information for this fact sheet are the [Hazardous Substances Data Bank \(HSDB\)](#) (2), a database of summaries of peer-reviewed literature, and the [Registry of Toxic Effects of Chemical Substances \(RTECS\)](#) (3), a database of toxic effects that are not peer reviewed.

Uses

- Calcium cyanamide is used as a fertilizer, defoliant, herbicide, fungicide, and pesticide; in the manufacture and refining of iron; and in the manufacture of calcium cyanide, melamine, and dicyandiamide. (1,2,5)

Sources and Potential Exposure

- Occupational exposure to calcium cyanamide may occur during its manufacture and use. (1)

Assessing Personal Exposure

- No information was located regarding the measurement of personal exposure to calcium cyanamide.

Health Hazard Information

Acute Effects:

- Calcium cyanamide is irritating to the eyes, skin, and respiratory tract in humans. Acute inhalation exposure may cause gastritis, rhinitis, pharyngitis, laryngitis, and tracheobronchitis. (1,2)
- Acute oral exposure of humans may cause a vasomotor reaction, resulting in intense localized erythematous flushing of the face, upper body, and arms, with headache, dizziness, fatigue, vertigo, congestion of the mucosa, nausea, and vomiting also reported. (1,2)
- Tachycardia and hypotension have also been observed in humans following acute oral exposure. (1,2)
- Peripheral neuropathy was reported in one case of acute oral exposure in a human. (2)
- Effects on liver enzymes have been reported in rats acutely exposed by ingestion. (2)
- Acute animal tests in rats, mice, and rabbits have demonstrated calcium cyanamide to have moderate to high acute toxicity from oral exposure and high acute toxicity from dermal exposure. (3)

Chronic Effects (Noncancer):

- Chronic occupational exposure has been reported to cause chronic rhinitis with perforation of the nasal septum in workers. (1,2)
- Chronic dermal exposure may result in slow-healing dermal ulceration in humans. (1,2)

- EPA has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for calcium cyanamide. (4)

Reproductive/Developmental Effects:

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

Cancer Risk:

- No information is available on the carcinogenic effects of calcium cyanamide in humans.
- EPA has not classified calcium cyanamide with respect to potential carcinogenicity.
- A formulation of calcium cyanamide in the diet was not found to be carcinogenic in a two-year National Toxicology Program study in rats or mice. (4)

Physical Properties

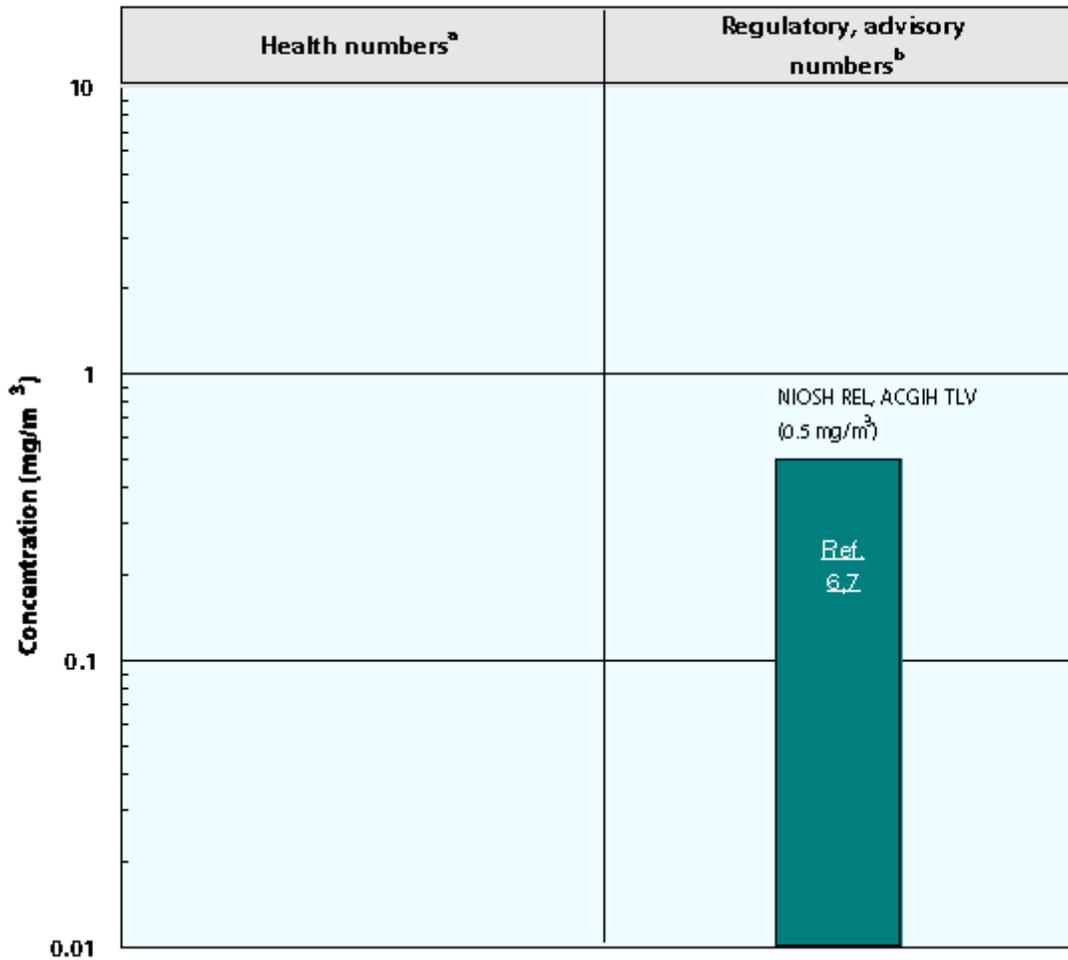
- The chemical formula for calcium cyanamide is CCaN_2 , and its molecular weight is 80.11 g/mol. (5)
 - Commercial grades of calcium cyanamide occur as grayish-black lumps of powder. Pure calcium cyanamide occurs as glistening hexagonal crystals that are insoluble in water. (2,5)
 - The odor threshold for calcium cyanamide has not been established.
-

Conversion Factors:

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 calcium cyanamide: $1 \text{ ppm} = 3.28 \text{ mg}/\text{m}^3$. To convert concentrations in air from $\mu\text{g}/\text{m}^3$ to mg/m^3 : $\text{mg}/\text{m}^3 = (\mu\text{g}/\text{m}^3) \times (1 \text{ mg}/1,000 \mu\text{g})$.

Health Data from Inhalation Exposure

Calcium Cyanamide



ACGIH TLV--American Conference of Governmental and Industrial Hygienists' threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.

NIOSH REL--National Institute of Occupational Safety and Health's recommended exposure limit; NIOSH-recommended exposure limit for an 8- or 10-h time-weighted-average exposure and/or ceiling.

The health and regulatory values cited in this factsheet were obtained in December 1999.

^a Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

^b Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice. NIOSH and ACGIH numbers are advisory.

Summary created in April 1992, updated in January 2000.

References

1. M. Sittig. Handbook of Toxic and Hazardous Chemicals and Carcinogens. 2nd ed. Noyes Publications, Park Ridge, NJ. 1985.
2. 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.
3. 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.

4. National Toxicology Program (NTP). Bioassay of Calcium Cyanamide (CAS No. 156-62-7) for Possible Carcinogenicity. TR-163. 1979.
 5. The Merck Index. An Encyclopedia of Chemicals, Drugs, and Biologicals. 11th ed. Ed. S. Budavari. Merck and Co. Inc., Rahway, NJ. 1989.
 6. National Institute for Occupational Safety and Health (NIOSH). Pocket Guide to Chemical Hazards. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Cincinnati, OH. 1997.
 7. American Conference of Governmental Industrial Hygienists (ACGIH). 1999 TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents. Biological Exposure Indices. Cincinnati, OH. 1999.
-