# Diazomethane

334-88-3

## Hazard Summary

The major source of exposure to diazomethane is occupational. Diazomethane is a strong respiratory irritant. Acute (short-term) inhalation exposure of humans to diazomethane may cause irritation of the eyes, cough, wheezing, asthmatic symptoms, pulmonary edema, pneumonia, dizziness, weakness, headache, and chest pains. No information is available on the chronic (long-term), reproductive, developmental, or carcinogenic effects of diazomethane in humans. Increased incidences of lung tumors have been observed in rats and mice exposed to diazomethane by inhalation and in dermally exposed mice. EPA has not classified diazomethane with respect to its potential carcinogenicity.

Please Note: The main sources of information for this fact sheet are Patty's Industrial Hygiene and Toxicology (5) and the Hazardous Substances Data Bank (HSDB), a database of summaries of peer-reviewed literature. (2)

### Uses

• Diazomethane is used as a methylating agent for acidic compounds such as carboxylic acids, phenols, and enols. (1,2,4)

## Sources and Potential Exposure

• Humans may be occupationally exposed to diazomethane in the workplace. (1)

### Assessing Personal Exposure

• No information was located regarding the measurement of personal exposure to diazomethane.

### Health Hazard Information

### Acute Effects:

- Diazomethane is a strong respiratory irritant. Acute inhalation exposure of humans to diazomethane may cause irritation of the eyes, cough, wheezing, asthmatic symptoms, pulmonary edema, pneumonia, dizziness, weakness, headache, chest pains, fever, moderate cyanosis, malaise, tremors, liver enlargement, hypersensitivity, and shock. (1–5)
- Severe respiratory tract irritation, hemorrhagic emphysema, pulmonary edema, and bronchopneumonia have been observed in animals acutely exposed by inhalation. (2-4)
- Acute animal tests in cats have demonstrated diazomethane to have high acute toxicity by inhalation. (6)

#### Chronic Effects (Noncancer):

- No information is available on the chronic effects of diazomethane in humans or animals.
- EPA has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for diazomethane. (7)

#### Reproductive/Developmental Effects:

• No information is available on the reproductive or developmental effects of diazomethane in humans or animals.

#### Cancer Risk:

- No information is available on the carcinogenic effects of diazomethane in humans.
- Increased incidences of pulmonary adenomas have been observed in rats and mice exposed to diazomethane by inhalation and in dermally exposed mice. (2,3,5)
- EPA has not classified diazomethane with respect to its potential carcinogenicity. (7)
- The International Agency for Research on Cancer (IARC) has classified diazomethane as a Group 3, not classifiable as to its carcinogenicity to humans. (2)

### **Physical Properties**

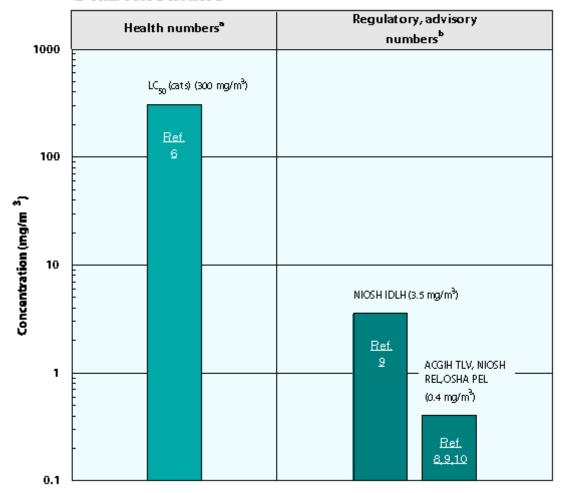
- The chemical formula for diazomethane is  $CH_2N_2$ , and its molecular weight is 42.04 g/mol. (4)
- Diazomethane occurs as a very toxic, explosive yellow gas. (2-5)
- Diazomethane has a musty odor; the odor threshold has not been established. (2)

#### Conversion Factors:

To convert concentrations in air (at 25°C) from ppm to  $mg/m\frac{3}{3}$ :  $mg/m^3 = (ppm) \times (molecular weight of the compound)/(24.45)$ . For diazomethane: 1 ppm = 1.72 mg/m .

### Health Data from Inhalation Exposure

## Diazomethane



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.

LC (Lethal Concentration  $_{50}$ )—A calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.

NIOSH IDLH --National Institute of Occupational Safety and Health's immediately dangerous to life or health limit; NIOSH recommended exposure limit to ensure that a worker can escape from an exposure condition that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from the environment. NIOSH REL --NIOSH's recommended exposure limit; NIOSH-recommended exposure limit for an 8- or 10-h time-weighted-average exposure and/or ceiling.

OSHA PEL -- Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

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

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

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. OSHA numbers are regulatory, whereas NIOSH and ACGIH numbers are advisory.

#### Summary created in April 1992, updated January 2000

#### References

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- 4. The Merck Index. An Encyclopedia of Chemicals, Drugs, and Biologicals. 11th ed. Ed. S. Budavari. Merck and Co. Inc., Rahway, NJ. 1989.
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- 7. U.S. Environmental Protection Agency. Integrated Risk Information System (IRIS) on Diazomethane. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1999.
- 8. 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.
- 9. 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.
- 10. Occupational Safety and Health Administration (OSHA). Occupational Safety and Health Standards, Toxic and Hazardous Substances. Code of Federal Regulations. 29 CFR 1910.1000. 1998.