Methylene Chloride

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PubChem CID	6344
Structure	 2D
Synonyms	DICHLOROMETHANE Methylene chloride 75-09-2 Methylene dichloride Methane, dichloro-
Molecular Formula	CH_2Cl_2
Molecular Weight	84.93 g/mol *Computed by PubChem 2.2 (PubChem release 2021.10.14)*

Contents

1 GHS Classification

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Note	*Pictograms displayed are for 99.8% (1943 of 1947) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for 0.2% (4 of 1947) of reports.*
Pictogram(s)	 Irritant Health Hazard
Signal	Warning
GHS Hazard Statements	H302 (23.9%): Harmful if swallowed [**Warning** Acute toxicity, oral] H315 (31%): Causes skin irritation [**Warning** Skin corrosion/irritation] H319 (53.6%): Causes serious eye irritation [**Warning** Serious eye damage/eye irritation] H336 (30.5%): May cause drowsiness or dizziness [**Warning** Specific target organ toxicity, single exposure; Narcotic effects] H341 (22.7%): Suspected of causing genetic defects [**Warning** Germ cell mutagenicity]

	H351 (99.8%): Suspected of causing cancer [**Warning** Carcinogenicity] H373 (11.8%): May causes damage to organs through prolonged or repeated exposure [**Warning** Specific target organ toxicity, repeated exposure]
Precautionary Statement Codes	P203, P260, P261, P264, P264+P265, P270, P271, P280, P301+P317, P302+P352, P304+P340, P305+P351+P338, P318, P319, P321, P330, P332+P317, P337+P317, P362+P364, P403+P233, P405, and P501 (The corresponding statement to each P-code can be found at the GHS Classification page.)
ECHA C&L Notifications Summary	*Aggregated GHS information provided per 1947 reports by companies from 61 notifications to the ECHA C&L Inventory. Each notification may be associated with multiple companies.* *Reported as not meeting GHS hazard criteria per 4 of 1947 reports by companies. For more detailed information, please visit **ECHA C&L website.*** *There are 60 notifications provided by 1943 of 1947 reports by companies with hazard statement code(s).* *Information may vary between notifications depending on impurities, additives, and other factors. The percentage value in parenthesis indicates the notified classification ratio from companies that provide hazard codes. Only hazard codes with percentage values above 10% are shown.*

▸ European Chemicals Agency (ECHA)

2 Identifiers

2.1 CAS

75-09-2

▸ Australian Industrial Chemicals Introduction Scheme (AICIS); CAMEO Chemicals; CAS Common C…

1605-72-7

▸ EPA DSSTox

3474-12-2

▸ EPA DSSTox

2.2 InChI

InChI=1S/CH2Cl2/c2-1-3/h1H2

Computed by InChI 1.0.6 (PubChem release 2021.10.14)

▸ PubChem

2.3 InChIKey

YMWUJEATGCHHMB-UHFFFAOYSA-N

Computed by InChI 1.0.6 (PubChem release 2021.10.14)

▸ PubChem

3 Physical Properties

3.1 Physical Description

Dichloromethane appears as a colorless liquid with a sweet, penetrating, ether-like odor. Noncombustible by if exposed to high temperatures may emit toxic **chloride** fumes. Vapors are narcotic in high concentrations. Used as a solvent and paint remover.

▸ CAMEO Chemicals

Liquid

▸ EPA Chemical Data Reporting (CDR); Human Metabolome Database (HMDB)

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3.2 Odor

Sweet, pleasant odor, like **chloroform**

U.S. Coast Guard, Department of Transportation. CHRIS - Hazardous Chemical Data. Volume II. Washington, D.C.: U.S. Government Printing Office, 1984-5.

▸ Hazardous Substances Data Bank (HSDB)

Chloroform like odor

NIOSH. NIOSH Pocket Guide to Chemical Hazards. Department of Health & Human Services, Centers for Disease Control & Prevention. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2010-168 (2010). Available from: ***https://www.cdc.gov/niosh/npg***

▸ **Hazardous Substances Data Bank (HSDB)**

Penetrating ether-like odor

Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 827

▸ **Hazardous Substances Data Bank (HSDB)**

Slightly sweet smell, similar to that of **trichloromethane**

Rossberg M et al; Chloromethanes. Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (1999-2014). New York, NY: John Wiley & Sons. Online Posting Date: Oct 15, 2011.

▸ **Hazardous Substances Data Bank (HSDB)**

3.3 Boiling Point

103.6 °F at 760 mmHg (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ **CAMEO Chemicals**

39.75 °C at 760 mm Hg

O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Cambridge, UK: Royal Society of Chemistry, 2013., p. 1124

▸ **Hazardous Substances Data Bank (HSDB)**

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3.4 Melting Point

-142.1 °F (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ **CAMEO Chemicals**

-95 °C

O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Cambridge, UK: Royal Society of Chemistry, 2013., p. 1124

▸ Hazardous Substances Data Bank (HSDB)

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3.5 Solubility

10 to 50 mg/mL at 70 °F (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

In water, 13,200 mg/L at 25 °C

Yalkowsky, S.H., He, Yan, Jain, P. Handbook of Aqueous Solubility Data Second Edition. CRC Press, Boca Raton, FL 2010, p. 4

▸ Hazardous Substances Data Bank (HSDB)

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3.6 Density

1.322 at 68 °F (USCG, 1999) - Denser than water; will sink

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

▸ CAMEO Chemicals

1.3255 20 °C/4 °C

O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Cambridge, UK: Royal Society of Chemistry, 2013., p. 1124

▸ Hazardous Substances Data Bank (HSDB)

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3.7 Vapor Density

2.93 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

2.93 (Air = 1.02)

Holbrook MT; Methylene Chloride. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2014). New York, NY: John Wiley & Sons. Online Posting Date: Aug 15, 2003.

▸ Hazardous Substances Data Bank (HSDB)

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3.8 Vapor Pressure

440 mmHg at 77 °F (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

435.0 [mmHg]

▸ Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

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3.9 Autoignition Temperature

1184 °F (USCG, 1999)

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

▸ CAMEO Chemicals

1033 °F (556 °C)

National Fire Protection Association; Fire Protection Guide to Hazardous Materials. 14TH Edition, Quincy, MA 2010, p. 325-84

▸ Hazardous Substances Data Bank (HSDB)

View More...

3.10 Decomposition

It can be decomposed by contact with hot surfaces and open flame, and then yield toxic fumes that are irritating and give warning of their presence. When heated to decomposition it emits highly toxic fumes of **phosgene** and /**hydrogen chloride**/.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2436

▸ Hazardous Substances Data Bank (HSDB)

3.11 Corrosivity

Liquid methylene chloride will attack some forms of plastics, rubber and coatings.

Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSH/OSHA - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981., p. 2

▸ Hazardous Substances Data Bank (HSDB)

3.12 Odor Threshold

Odor Threshold Low: 1.2 [mmHg]

Odor Threshold High: 440.0 [mmHg]

Detection odor threshold from AIHA (mean = 160 ppm)

▸ Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

205-307 ppm

U.S. Coast Guard, Department of Transportation. CHRIS - Hazardous Chemical Data. Volume II. Washington, D.C.: U.S. Government Printing Office, 1984-5.

▸ Hazardous Substances Data Bank (HSDB)

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4 Toxicity Information

4.1 Toxicity Summary

IDENTIFICATION AND USE: Dichloromethane is a clear colorless, volatile, sweet-smelling lipophilic liquid. It is commonly used as a solvent in wood varnishes, paints, strippers, cements, vapor degreasing of metal parts. Methylene chloride is also widely used as a process solvent in the manufacture of a variety of products including food, textiles, insecticides, herbicides, steroids, antibiotics and vitamins. Not registered for current pesticide use in the U.S., but approved pesticide uses may change periodically and so federal, state and local authorities must be consulted for currently approved uses. HUMAN EXPOSURE AND TOXICITY: Methylene chloride is rapidly absorbed following inhalation, through the alveoli of the lungs into the systemic circulation. It is also absorbed from the gastrointestinal tract, and dermal exposure results in absorption but at a slower rate than via the other routes of exposure. Methylene chloride is quite rapidly excreted, mostly via the lungs in the exhaled air. It can cross the blood-brain barrier and be transferred across the placenta, and small amounts can be excreted in urine or in milk. Its biotransformation by the hepatic mixed function oxidases (MFO) leads to formation of carbon monoxide (CO) and elevated blood carboxyhemoglobin (COHb). Human exposure is mainly due to inhalation but there are incidences of toxicity from oral and dermal contact.Dermally, dichloromethane irritates the skin and eyes especially when evaporation is prevented; prolonged contact may cause chemical burns. Following inhalation of dichloromethane pulmonary edema, hearing loss, CNS depression, liver dysfunction, renal dysfunctions, cardiac stress, and effects on hematological parameters have been reported. Exposure at extremely high levels from use as a paint stripper by consumers or in an occupational setting, has been fatal. Dichloromethane is reasonably anticipated to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in experimental animals. ANIMAL STUDIES: Dichloromethane is not teratogenic in rats or mice at concentrations up to 16,250 mg/cu m. Developmentally, dichloromethane is able to cross the placental barrier, and minor skeletal variations, fetal weight reduction, and more rapid behavioral habituation was evident in rats exposed before and during gestation. Single ip injection of dichloromethane (1330 mg/kg) into adult male rats caused renal proximal tubular degeneration. Morphological effects were observed in the cortex and the outer medulla. Prolonged exposure to high concentrations of methylene chloride (> or = 17,700 mg/cu m) caused reversible CNS effects, slight eye irritation and mortality in several laboratory species. Neurological damage was reversible in rats exposed to 7, 100 mg/cu m dichloromethane for 13 weeks via inhalation. Body weight reduction was observed in rats at 3500 mg/cu m and in mice from 17,700 m/cu m. Effects on the liver were noted in dogs continuously exposed to

3,500 mg/cu m for up to 100 days. After intermittent exposure, effects on the liver were observed in rats at 3500 mg/cu m and in mice at 14,100 mg/cu m. Other target organs are the lungs and the kidneys. **Dichloromethane** is considered a carcinogen. When administered at levels of 0, 60, 125, 185 and 250 mg/kg body weight/day to mice in deionized drinking **water** for 104 wk, the high dose male and female mice showed a transitory increase in mean leucocyte counts. There was a slight elevation of proliferative hepatocellular lesions in the treated males but no dose related trend was apparent and the effect was absent in the females. Neoplastic lesions observed in the study were homogeneous among all groups and were within the range of incidence in historical controls. The results of this study demonstrated a toxicological no observable effect level of 185 mg/kg body weight/day in both sexes. In a 2 year study, female rats exposed to 500, 1500, or 3500 ppm had an increase in the total number of benign mammary tumors in an exposure-related manner. This effect was also evident in male rats in the 1500- and 3500-ppm exposure groups. Male rats exposed to 1500 or 3500 ppm had an increased number of sarcomas located in or around the salivary glands. In contrast, hamsters exposed to the same concentrations had less extensive spontaneous geriatric changes, decreased mortality (females), and lacked evidence of definite target organ toxicity. **Dichloromethane** is mutagenic in prokaryotic microorganisms with or without metabolic activation (Salmonella or Escherichia coil). In eukaryotic systems it gives either negative or, in one case, weakly positive results.

▸ **Hazardous Substances Data Bank (HSDB)**

Methylene chloride targets the lungs, blood system, and nervous system. In the lungs its metabolites damage Clara cells. It is also metabolized into **carbon monoxide**, which binds to hemoglobin to produce dose-dependent increases in carboxyhemoglobin. This results in the reduced oxygen transport and neurological dysfunction characteristic of carboxyhemoglobinemia (**carbon monoxide** poisoning). Methylene chloride is also believed to cause neurotoxicity by interfering with signal transmission in a manner similar to general anesthetics. Certain metabolites, such as **formaldehyde**, may result in carcinogenic effects by causing DNA single strand breaks, DNA-protein crosslinks, and other mutations. (T10, L188)

L188: ATSDR - Agency for Toxic Substances and Disease Registry (2000). Toxicological profile for methylene chloride. U.S. Public Health Service in collaboration with U.S. Environmental Protection Agency (EPA). ***http://www.atsdr.cdc.gov/toxprofiles/tp14.html***

T10: Casarett LJ, Klaassen CD, and Watkins JB (2003). Casarett and Doull's essentials of toxicology. New York: McGraw-Hill/Medical Pub. Div.

▸ **Toxin and Toxin Target Database (T3DB)**

4.2 Non-Human Toxicity Values

LC50 Mouse inhalation 16000 ppm/7 hr plus 1 hr observation

*IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at: **https://monographs.iarc.fr/ENG/Classification/index.php**, p. V41 59 (1986)*

▸ **Hazardous Substances Data Bank (HSDB)**

LD50 Rat oral 1600 mg/kg

Verschueren, K. Handbook of Environmental Data of Organic Chemicals. 2nd ed. New York, NY: Van Nostrand Reinhold Co., 1983., p. 849

▸ **Hazardous Substances Data Bank (HSDB)**

LC50 Rat inhalation 2,000,000 mg/cu m/15 min

*IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at: **https://monographs.iarc.fr/ENG/Classification/index.php**, p. V41 59 (1986)*

▸ **Hazardous Substances Data Bank (HSDB)**

LC50 Guinea pig inhalation 11600 ppm/6 hr plus 18 hr observation

*IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at: **https://monographs.iarc.fr/ENG/Classification/index.php**, p. V41 59 (1986)*

▸ **Hazardous Substances Data Bank (HSDB)**

For more Non-Human Toxicity Values (Complete) data for **DICHLOROMETHANE** (15 total), please visit the **HSDB record page**.

▸ **Hazardous Substances Data Bank (HSDB)**

5 Exposure Limits

5.1 Immediately Dangerous to Life or Health (IDLH)

2300 ppm ; A potential occupational carcinogen. (NIOSH, 2024)

▸ **CAMEO Chemicals**

2300.0 [ppm]

Excerpts from Documentation for IDLHs: Human data: Volunteers exposed at 1,000 ppm for 2 hours had carboxyhemoglobin levels in excess of those permitted in industry from exposure to **carbon monoxide** alone [Stewart et al. 1972]. A 10minute exposure at 2,330 ppm has

produced vertigo [Lehmann et al. 1936]. However, it has also been reported that no feeling of dizziness was noted after 1 hour of exposure to 2,300 ppm [Sax 1975]. It has been stated that no dizziness, but slight nausea, is caused by exposure to 2,300 ppm for 1 hour and that methylene chloride is not lethal at 25,000 ppm [Thienes and Haley]

- Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

NIOSH considers methylene chloride a potential occupational carcinogen. [2300 ppm]

NIOSH. NIOSH Pocket Guide to Chemical Hazards. Department of Health & Human Services, Centers for Disease Control & Prevention. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2010-168 (2010). Available from: ***https://www.cdc.gov/niosh/npg***

- Hazardous Substances Data Bank (HSDB)

2300 ppm

- Occupational Safety and Health Administration (OSHA)

Ca [2300 ppm]

See: 75092

- The National Institute for Occupational Safety and Health (NIOSH)

5.2 Recommended Exposure Limit (REL)

Ca See Appendix A

- The National Institute for Occupational Safety and Health (NIOSH)

5.3 Permissible Exposure Limit (PEL)

25.0 [ppm], STEL(OSHA) = 125 ppm

- Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

PEL-TWA (8-Hour Time Weighted Average)

25 ppm [12.5 ppm Action Level]

- Occupational Safety and Health Administration (OSHA)

PEL-STEL (Short Term Exposure Limit)

125 ppm

- Occupational Safety and Health Administration (OSHA)

[1910.1052] TWA 25 ppm ST 125 ppm

- The National Institute for Occupational Safety and Health (NIOSH)

5.4 Threshold Limit Values (TLV)

50.0 [ppm]

- Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

8 hr Time Weighted Avg (TWA): 50 ppm.

American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. ACGIH, Cincinnati, OH 2014, p. 25

- Hazardous Substances Data Bank (HSDB)

View More...

5.5 Effects of Short Term Exposure

The substance is irritating to the eyes, skin and respiratory tract. If swallowed the substance may cause vomiting and could result in aspiration pneumonitis. The substance may cause effects on the central nervous system, blood, liver, heart and lungs. Exposure could cause carbon monoxide poisoning. This may result in impaired functions. Exposure at high concentrations could cause lowering of consciousness and death. The effects may be delayed.

- ILO-WHO International Chemical Safety Cards (ICSCs)

5.6 Effects of Long Term Exposure

The substance may have effects on the central nervous system. This substance is probably carcinogenic to humans.

- ILO-WHO International Chemical Safety Cards (ICSCs)

5.7 Explosive Limits and Potential

Upper 66.4% in oxygen; lower 15.5% in oxygen

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2435

▸ Hazardous Substances Data Bank (HSDB)

It will not form explosive mixtures with air at ordinary temperatures.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2436

▸ Hazardous Substances Data Bank (HSDB)

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6 Health and Symptoms

6.1 Physical Dangers

The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

6.2 Chemical Dangers

Decomposes on heating or on burning and on contact with hot surfaces. This produces toxic and corrosive fumes including **hydrogen chloride** (see ICSC 0163), **phosgene** (see ICSC 0007) and **carbon monoxide** (see ICSC 0023). Reacts violently with strong oxidants, strong bases and metals such as **aluminium** powder and **magnesium** powder. This generates fire and explosion hazard. Attacks some forms of plastic, rubber and coatings.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

6.3 Symptoms

Inhalation Exposure

Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

Skin Exposure

MAY BE ABSORBED! Dry skin. Redness. Burning sensation.

- ILO-WHO International Chemical Safety Cards (ICSCs)

Eye Exposure

Pain. Redness.

- ILO-WHO International Chemical Safety Cards (ICSCs)

Ingestion Exposure

Abdominal pain. Further see Inhalation.

- ILO-WHO International Chemical Safety Cards (ICSCs)

irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]

- The National Institute for Occupational Safety and Health (NIOSH)

Breathing large amounts of methylene chloride causes dizziness, nausea, tingling or numbness of the finger and toes, loss of concentration, and reduced hand-eye coordination. Very high concentrations can lead to unconciousness, coma, and death. Skin contact with methylene chloride causes burning and redness of the skin. (L188, L189)

L188: ATSDR - Agency for Toxic Substances and Disease Registry (2000). Toxicological profile for methylene chloride. U.S. Public Health Service in collaboration with U.S. Environmental Protection Agency (EPA). ***http://www.atsdr.cdc.gov/toxprofiles/tp14.html***

L189: Wikipedia. Dichloromethane. Last Updated 20 May 2009. ***http://en.wikipedia.org/wiki/Methylene_Chloride***

- Toxin and Toxin Target Database (T3DB)

6.4 Evidence for Carcinogenicity

CLASSIFICATION: B2; probable human carcinogen. BASIS FOR CLASSIFICATION: Based on inadequate human data and sufficient evidence of carcinogenicity in animals; increased incidence of hepatocellular neoplasms and alveolar/bronchiolar neoplasms in male and female mice, and increased incidence of benign mammary tumors in both sexes of rats, salivary gland sarcomas in male rats and leukemia in female rats. This classification is supported by some positive genotoxicity data, although results in mammalian systems are generally negative. HUMAN CARCINOGENICITY DATA: Inadequate. ANIMAL CARCINOGENICITY DATA: Sufficient.

U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS). Summary on Dichloromethane (75-09-2). Available from, as of March 15, 2000: ***https://www.epa.gov/iris/***

▸ Hazardous Substances Data Bank (HSDB)

A3: Confirmed animal carcinogen with unknown relevance to humans.

American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. ACGIH, Cincinnati, OH 2014, p. 25

▸ Hazardous Substances Data Bank (HSDB)

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6.5 Carcinogen Classification

1 of 2	
IARC Carcinogenic Agent	Dichloromethane (Methylene chloride)
IARC Carcinogenic Classes	Group 2A: Probably carcinogenic to humans
IARC Monographs	Volume Sup 7: Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42, 1987; 440 pages; ISBN 92-832-1411-0 (out of print) Volume 71: (1999) Re-evaluation of Some Organic Chemicals, Hydrazine and Hydrogen Peroxide (Part 1, Part 2, Part 3) Volume 110: (2017) Some Chemicals Used as Solvents and in Polymer Manufacture

▸ International Agency for Research on Cancer (IARC)

2 of 2	
Carcinogen Classification	2A, probably carcinogenic to humans. (L135)

▸ Toxin and Toxin Target Database (T3DB)

6.6 Exposure Routes

The substance can be absorbed into the body by inhalation, by ingestion and through the skin.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

inhalation, skin absorption, ingestion, skin and/or eye contact

▸ The National Institute for Occupational Safety and Health (NIOSH)

Oral (L188) ; inhalation (L188) ; dermal (L188)

L188: ATSDR - Agency for Toxic Substances and Disease Registry (2000). Toxicological profile for methylene chloride. U.S. Public Health Service in collaboration with U.S. Environmental Protection Agency (EPA). ***http://www.atsdr.cdc.gov/toxprofiles/tp14.html***

- **Toxin and Toxin Target Database (T3DB)**

6.7 Target Organs

Cancer, Dermal (Skin), Hepatic (Liver), Neurological (Nervous System)

- **Agency for Toxic Substances and Disease Registry (ATSDR)**

Hepatic

- **EPA Integrated Risk Information System (IRIS)**

Eyes, skin, cardiovascular system, central nervous system

- **The National Institute for Occupational Safety and Health (NIOSH)**

6.8 Cancer Sites

Hepatic

Respiratory

- **EPA Integrated Risk Information System (IRIS)**

[in animals: lung, liver, salivary & mammary gland tumors]

- **The National Institute for Occupational Safety and Health (NIOSH)**

6.9 Fire Hazards

Special Hazards of Combustion Products: Dissociation products generated in a fire may be irritating or toxic. (USCG, 1999)

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

- **CAMEO Chemicals**

ERG 2024, Guide 160 (Dichloromethane)

· Some of these materials may burn, but none ignite readily.

· Most vapors are heavier than air.

· Air/vapor mixtures may explode when ignited.

· Container may explode in heat of fire.

▸ Emergency Response Guidebook (ERG)

Flammable under specific conditions. Gives off irritating or toxic fumes (or gases) in a fire. Explosive under specific conditions. Heating will cause rise in pressure with risk of bursting. Risk of fire and explosion.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

6.10 Hazards Summary

Methylene chloride is a colorless liquid with a mild, sweet odor. Another name for it is dichloromethane. Methylene chloride does not occur naturally in the environment.Methylene chloride is used as an industrial solvent and as a paint stripper. It may also be found in some aerosol and pesticide products and is used in the manufacture of photographic film.

▸ Agency for Toxic Substances and Disease Registry (ATSDR)

Methylene chloride is predominantly used as a solvent. The acute (short-term) effects of methylene chloride inhalation in humans consist mainly of nervous system effects including decreased visual, auditory, and motor functions, but these effects are reversible once exposure ceases. The effects of chronic (long-term) exposure to methylene chloride suggest that the central nervous system (CNS) is a potential target in humans and animals. Human data are inconclusive regarding methylene chloride and cancer. Animal studies have shown increases in liver and lung cancer and benign mammary gland tumors following the inhalation of methylene chloride.

▸ EPA Air Toxics

Evidence of liver injury in exposed workers has been reported. Some of the methylene chloride absorbed is metabolized to carbon monoxide. Non-smoking workers exposed to average concentrations of 66 ppm had carboxyhemoglobin levels of 3.6 %. This is above that permitted for exposure to carbon monoxide (3.5 %). [ACGIH] Dichloromethane causes trivial hepatotoxicity, unless exposure is very heavy or agent ingested. [Zimmerman, p. 333] In one study, 24 healthy workers chronically exposed to methylene chloride at concentrations averaging from 60 to 475 ppm were electrocardiographically monitored and showed neither an increase in ventricular or supraventricular ectopic activity nor episodic ST segment

depression. Likewise, there was no evidence of cardiac susceptibility or electrographic abnormalities in several case reports of otherwise healthy persons rendered unconscious from acute exposure to methylene chloride. [ATSDR Case Studies #3] Methylene chloride is in the list of Some volatile substances which may be abused by inhalation published on the web site of the U.N. International Drug Control Programme, indicating its potential to cause narcosis in workers. [Flanagan et al. Volatile Substance Abuse]

ACGIH - Documentation of the TLVs and BEIs, 7th Ed. Cincinnati: ACGIH Worldwide, 2020.

Zimmerman - Zimmerman HJ. Hepatotoxicity. Philadelphia: Lippincott Williams & Wilkins, 1999., p. 333

▸ **Haz-Map, Information on Hazardous Chemicals and Occupational Diseases**

6.11 Fire Potential

It is flammable in the range of 12-19% in air but ignition is difficult.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2436

▸ **Hazardous Substances Data Bank (HSDB)**

6.12 Skin, Eye, and Respiratory Irritations

Methylene chloride irritates the skin and eyes especially when evaporation is prevented. In these circumstances, prolonged contact may cause chemical burns.

International Programme on Chemical Safety/ Environmental Health Criteria 164; Methylene Chloride (Second Edition). (1996). Available from, as of July 18, 2014:
https://www.inchem.org/documents/ehc/ehc/ehc164.htm

▸ **Hazardous Substances Data Bank (HSDB)**

7 First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with **water** or **normal saline** solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with **water** while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and **water**. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or

irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. IMMEDIATELY call a physician and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: DO NOT INDUCE VOMITING. Volatile chemicals have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. If the victim is conscious and not convulsing, give 1 or 2 glasses of **water** to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital.

OTHER: Since this chemical is a known or suspected carcinogen you should contact a physician for advice regarding the possible long term health effects and potential recommendation for medical monitoring. Recommendations from the physician will depend upon the specific compound, its chemical, physical and toxicity properties, the exposure level, length of exposure, and the route of exposure. (NTP, 1992)

> *National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.*

▸ **CAMEO Chemicals**

ERG 2024, Guide 160 (Dichloromethane)

General First Aid:

· Call 911 or emergency medical service.

· Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.

· Move victim to fresh air if it can be done safely.

· Administer **oxygen** if breathing is difficult.

· If victim is not breathing:

-- DO NOT perform mouth-to-mouth resuscitation; the victim may have ingestedor inhaled the substance.

-- If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way

valve or other device).

-- If no pulse detected or no respiratory medical device available, provide continuouscompressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.

· Remove and isolate contaminated clothing and shoes.

· For minor skin contact, avoid spreading material on unaffected skin.

· In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.

· For severe burns, immediate medical attention is required.

· Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.

· Keep victim calm and warm.

· Keep victim under observation.

· For further assistance, contact your local Poison Control Center.

· Note: Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.

Specific First Aid:

· Wash skin with soap and water.

▸ Emergency Response Guidebook (ERG)

(See general first aid procedures)

Eye: Irrigate immediately - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: Soap wash promptly - If this chemical contacts the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly.

Breathing: Respiratory support

Swallow: Medical attention immediately - If this chemical has been swallowed, get medical attention immediately.

▸ The National Institute for Occupational Safety and Health (NIOSH)

8 Flammability and Explosivity

8.1 Flammable Limits

Lower flammable limit: 13% by volume; Upper flammable limit: 23% by volume

National Fire Protection Association; Fire Protection Guide to Hazardous Materials. 14TH Edition, Quincy, MA 2010, p. 325-84

▸ Hazardous Substances Data Bank (HSDB)

Flammability

Combustible Liquid

▸ The National Institute for Occupational Safety and Health (NIOSH)

8.2 Lower Explosive Limit (LEL)

12 % (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

13%

▸ Occupational Safety and Health Administration (OSHA); The National Institute for Occupational S...

8.3 Upper Explosive Limit (UEL)

19 % (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

23%

▸ Occupational Safety and Health Administration (OSHA); The National Institute for Occupational S...

8.4 NFPA Hazard Classification

1 of 2 View All

NFPA 704 Diamond	 2-1-0
NFPA Health Rating	2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
NFPA Fire Rating	1 - Materials that must be preheated before ignition can occur. Materials require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur.
NFPA Instability Rating	0 - Materials that in themselves are normally stable, even under fire conditions.

▸ Hazardous Substances Data Bank (HSDB)

8.5 Critical Temperature & Pressure

Critical temperature: 508.2 K; critical pressure: 6.35 MPa

Haynes, W.M. (ed.). CRC Handbook of Chemistry and Physics. 94th Edition. CRC Press LLC, Boca Raton: FL 2013-2014, p. 6-62

▸ Hazardous Substances Data Bank (HSDB)

9 Stability and Reactivity

9.1 Hazardous Reactivities & Incompatibilities

Strong oxidizers; caustics; chemically-active metals such as aluminum, magnesium powders, potassium & sodium; concentrated nitric acid

▸ The National Institute for Occupational Safety and Health (NIOSH)

9.2 Reactivity Profile

DICHLOROMETHANE reacts vigorously with active metals such as lithium, sodium and potassium, and with strong bases such as potassium tert-butoxide. It is incompatible with strong oxidizers, strong caustics and chemically active metals such as aluminum or magnesium powders. The liquid will attack some forms of plastic, rubber and coatings. This

compound reacts with sodium-potassium alloy, (potassium hydrogen + N-methyl-N-nitrosurea), nitrogen tetraoxide and liquid oxygen. It also reacts with titanium. On contact with water it corrodes iron, some stainless steels, copper and nickel. It is incompatible with alkali metals. It is incompatible with amines, zinc and alloys of aluminum, magnesium and zinc. This compound is liable to explode when mixed with dinitrogen pentaoxide or nitric acid. Mixtures of this compound in air with methanol vapor are flammable. (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

▸ CAMEO Chemicals

9.3 Reactivity Alerts

9.3.1 CSL Reaction Information

1 of 5	View All
CSL No	CSL00006
Reactants/Reagents	DICHLOROMETHANE + SODIUM AZIDE
Warning Message	Formation of diazidomethane which can explode. Azide reactions should not be performed in hologenated solvents.
GHS Category	Explosive
Reaction Class	Substitution
Reference Source	C&EN
Modified Date	6/29/18
Create Date	10/2/17

▸ Pistoia Alliance Chemical Safety Library

2 of 5	View All
CSL No	CSL00102
Reactants/Reagents	DICHLOROMETHANE + SODIUM
Warning Message	Potentially explosive

GHS Category	Explosive
Reference Source	User-Reported
Modified Date	7/8/18
Create Date	8/8/17

▸ Pistoia Alliance Chemical Safety Library

10 Storage and Handling

10.1 Safe Storage

Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Well closed. Cool. Ventilation along the floor.

▸ ILO-WHO International Chemical Safety Cards (ICSCs)

10.2 Storage Conditions

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Heat sensitive. Store under inert gas.

Sigma-Aldrich; Material Safety Data Sheet for Dichloromethane, Product Number: 676853, Version 5.4 (Revision Date 02/21/2014). Available from, as of June 25, 2014. ***https://www.sigmaaldrich.com/safety-center.html***

▸ Hazardous Substances Data Bank (HSDB)

To minimize the decomp of **dichloromethane**, storage containers should be galvanized or lined with a phenolic coating.

USEPA; Health Assessment Document: Dichloromethane (Methylene Dichloride) p.3-3 (1982) EPA-600/8-82-004

▸ Hazardous Substances Data Bank (HSDB)

10.3 Personal Protective Equipment (PPE)

Excerpt from NIOSH Pocket Guide for Methylene chloride:

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: PREVENT EYE CONTACT - Wear appropriate eye protection to prevent eye contact.

Wash skin: WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.

Remove: WHEN WET OR CONTAMINATED - Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift.

Provide:

• EYEWASH - Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substances; this is irrespective of the recommendation involving the wearing of eye protection.

• QUICK DRENCH - Facilities for quickly drenching the body should be provided within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2024)

▸ CAMEO Chemicals

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Sigma-Aldrich; Material Safety Data Sheet for Dichloromethane, Product Number: 676853, Version 5.4 (Revision Date 02/21/2014). Available from, as of June 25, 2014. ***https://www.sigmaaldrich.com/safety-center.html***

▸ Hazardous Substances Data Bank (HSDB)

View More...

10.4 Respirator Recommendations

(See OSHA respirator requirements for selected chemicals)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister

Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

- The National Institute for Occupational Safety and Health (NIOSH)

10.5 Nonfire Spill Response

Excerpt from ERG Guide 160 [Halogenated Solvents]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Stop leak if you can do it without risk.

SMALL LIQUID SPILL: Pick up with sand, earth or other non-combustible absorbent material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Prevent entry into waterways, sewers, basements or confined areas. (ERG, 2024)

*2024 Emergency Response Guidebook, **https://www.phmsa.dot.gov/training/hazmat/erg/emergency-response-guidebook-erg***

- CAMEO Chemicals

11 Cleanup and Disposal

11.1 Spillage Disposal

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

- ILO-WHO International Chemical Safety Cards (ICSCs)

11.2 Cleanup Methods

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Sigma-Aldrich; Material Safety Data Sheet for Dichloromethane, Product Number: 676853, Version 5.4 (Revision Date 02/21/2014). Available from, as of June 25, 2014. ***https://www.sigmaaldrich.com/safety-center.html***

▸ **Hazardous Substances Data Bank (HSDB)**

The following wastewater treatment technology has been investigated for **dichloromethane**. Concentration Process: Stripping.

USEPA; Management of Hazardous Waste Leachate, EPA Contract No.68-03-2766 p.E-3-E-22 (1982)

▸ **Hazardous Substances Data Bank (HSDB)**

11.3 Disposal Methods

Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste numbers U080 and F002, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

40 CFR 240-280, 300-306, 702-799 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of August 3, 2014: ***https://www.ecfr.gov***

▸ **Hazardous Substances Data Bank (HSDB)**

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

▸ **Hazardous Substances Data Bank (HSDB)**

View More...

12 Additional Considerations

12.1 Toxic Combustion Products

Toxic gases and vapors (such as **hydrogen chloride**, **phosgene** and **carbon monoxide**) may be released in a fire involving methylene chloride.

Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSH/OSHA - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981., p. 2

▸ Hazardous Substances Data Bank (HSDB)

13 Information Sources

FILTER BY SOURCE

ALL SOURCES

1. ## Agency for Toxic Substances and Disease Registry (ATSDR)

   LICENSE
   The information provided using CDC Web site is only intended to be general summary information to the public. It is not intended to take the place of either the written law or regulations.
   https://www.cdc.gov/Other/disclaimer.html

   Methylene Chloride
   https://wwwn.cdc.gov/TSP/substances/ToxSubstance.aspx?toxid=42

2. ## EPA Integrated Risk Information System (IRIS)

   LICENSE
   https://www.epa.gov/web-policies-and-procedures/epa-disclaimers#copyright

   Dichloromethane
   https://iris.epa.gov/ChemicalLanding/&substance_nmbr=70

3. ## The National Institute for Occupational Safety and Health (NIOSH)

   LICENSE
   The information provided using CDC Web site is only intended to be general summary information to the public. It is not intended to take the place of either the written law or regulations.
   https://www.cdc.gov/Other/disclaimer.html

   Methylene chloride
   https://www.cdc.gov/niosh/npg/npgd0414.html

   Methane, dichloro-
   https://www.cdc.gov/niosh-rtecs/PA7AD550.html

4. ## EPA Air Toxics

   LICENSE

https://www.epa.gov/privacy/privacy-act-laws-policies-and-resources

Methylene Chloride (Dichloromethane)

https://www.epa.gov/sites/default/files/2016-09/documents/methylene-chloride.pdf

5. Haz-Map, Information on Hazardous Chemicals and Occupational Diseases

Methylene chloride

https://haz-map.com/Agents/12

6. Australian Industrial Chemicals Introduction Scheme (AICIS)

Methane, dichloro-

https://services.industrialchemicals.gov.au/search-assessments/

Methane, dichloro-

https://services.industrialchemicals.gov.au/search-inventory/

7. CAMEO Chemicals

DICHLOROMETHANE

https://cameochemicals.noaa.gov/chemical/3154

8. CAS Common Chemistry

Dichloromethane

https://commonchemistry.cas.org/detail?cas_rn=75-09-2

9. ChemIDplus

Methylene chloride [NF]

https://pubchem.ncbi.nlm.nih.gov/substance/?source=chemidplus&sourceid=0000075092

10. DTP/NCI

DICHLOROMETHANE

https://dtp.cancer.gov/dtpstandard/servlet/dwindex?searchtype=NSC&outputformat=html&searchlist=406122

11. EPA Acute Exposure Guideline Levels (AEGLs)

Methylene chloride

https://www.epa.gov/aegl/methylene-chloride-results-aegl-program

12. EPA Chemical Data Reporting (CDR)

Methane, dichloro-

https://www.epa.gov/chemical-data-reporting

13. EPA Chemicals under the TSCA

Methane, dichloro-

https://www.epa.gov/chemicals-under-tsca

14. EPA DSSTox

Dichloromethane

https://comptox.epa.gov/dashboard/DTXSID0020868

Dichlorocarbene

https://comptox.epa.gov/dashboard/DTXSID60166893

dichloromethane radical

https://comptox.epa.gov/dashboard/DTXSID20188293

15. European Chemicals Agency (ECHA)

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https://echa.europa.eu/web/guest/legal-notice

dichloromethane; methylene chloride

https://chem.echa.europa.eu/100.000.763

dichloromethane; methylene chloride (EC: 200-838-9)

https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/7285

16. FDA Global Substance Registration System (GSRS)

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https://www.fda.gov/about-fda/about-website/website-policies#linking

METHYLENE CHLORIDE

https://gsrs.ncats.nih.gov/ginas/app/beta/substances/588X2YUY0A

17. Hazardous Substances Data Bank (HSDB)

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https://www.nlm.nih.gov/web_policies.html

DICHLOROMETHANE

https://pubchem.ncbi.nlm.nih.gov/source/hsdb/66

18. Human Metabolome Database (HMDB)

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http://www.hmdb.ca/citing

Dichloromethane

http://www.hmdb.ca/metabolites/HMDB0031548

19. ILO-WHO International Chemical Safety Cards (ICSCs)

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https://www.ilo.org/global/copyright/lang--en/index.htm

DICHLOROMETHANE

https://www.ilo.org/dyn/icsc/showcard.display?p_version=2&p_card_id=0058

20. New Zealand Environmental Protection Authority (EPA)

Methane, dichloro-

https://www.epa.govt.nz/industry-areas/hazardous-substances/guidance-for-importers-and-manufacturers/hazardous-substances-databases/

21. NJDOH RTK Hazardous Substance List

methylene chloride

http://nj.gov/health/eoh/rtkweb/documents/fs/1255.pdf

22. Occupational Safety and Health Administration (OSHA)

METHYLENE CHLORIDE (DICHLOROMETHANE)

https://www.osha.gov/chemicaldata/572

23. Risk Assessment Information System (RAIS)

Methylene Chloride

https://rais.ornl.gov/cgi-bin/tools/TOX_search

24. Emergency Response Guidebook (ERG)

Dichloromethane

https://pubchem.ncbi.nlm.nih.gov/erg/

25. Hazardous Chemical Information System (HCIS), Safe Work Australia

dichloromethane

http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=1282

26. NITE-CMC

Dichloromethane; Methylene dichloride - FY2006 (New/original classication)

https://www.chem-info.nite.go.jp/chem/english/ghs/06-imcg-0140e.html

Dichloromethane - FY2017 (Revised classification)

https://www.chem-info.nite.go.jp/chem/english/ghs/17-mhlw-2064e.html

27. Regulation (EC) No 1272/2008 of the European Parliament and of the Council

dichloromethane; methylene chloride

https://eur-lex.europa.eu/eli/reg/2008/1272/oj

28. Toxin and Toxin Target Database (T3DB)

Dichloromethane

http://www.t3db.ca/toxins/T3D0080

29. International Agency for Research on Cancer (IARC)

Dichloromethane (Methylene chloride)

https://monographs.iarc.who.int/list-of-classifications

30. Pistoia Alliance Chemical Safety Library

DICHLOROMETHANE + SODIUM AZIDE

https://safescience.cas.org/

31. PubChem