SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : 1,2-Dichlorobenzene
Catalog Number : io-2141
CAS Number : 95-50-1
Identified uses : Laboratory chemicals, manufacture of chemical compounds
Company : Ionz

>> R&D Use only

2. Hazards Identification

GHS Classification:

Flammable liquid (category 2)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 3)
Specific target organ toxicity, single exposure (Category 1)

Note

>> Pictograms displayed are for 99.8% (528 of 529) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for 0.2% (1 of 529) of reports.

Pictogram(s)

>> Warning

GHS Hazard Statements

>> H302+H332 (22.3%): Harmful if swallowed or if inhaled [Warning Acute toxicity, oral; acute toxicity, inhalation]

>> H302 (99.8%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H315 (99.6%): Causes skin irritation [Warning Skin corrosion/irritation]

>> H317 (44.8%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H319 (99.6%): Causes serious eye irritation [Warning Serious eye damage/eye irritation]

>> H332 (37.1%): Harmful if inhaled [Warning Acute toxicity, inhalation]

>> H335 (99.1%): May cause respiratory irritation [Warning Specific target organ toxicity, single exposure; Respiratory tract irritation]

>> H400 (99.4%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (99.6%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P261, P264, P264+P265, P270, P271, P272, P273, P280, P301+P317, P302+P352, P304+P340, P305+P351+P338, P317, P319, P321, P330, P332+P317, P333+P317, P337+P317, P362+P364, P391, P403+P233, P405, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA Fire Rating

>> 2 - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air.

NFPA Instability Rating

>> 0 - Materials that in themselves are normally stable, even under fire conditions.

Health Hazards:

>> Chronic inhalation of mist or vapors may result in damage to lungs, liver, and kidneys. Acute vapor exposure can cause symptoms ranging from coughing to central nervous system depression and transient anesthesia. Irritating to skin, eyes, and mucous membranes. May cause dermatitis. (USCG, 1999)

ERG 2024, Guide 152 (o-Dichlorobenzene)

>> Highly toxic, may be fatal if inhaled, ingested or absorbed through skin.

>> Contact with molten substance may cause severe burns to skin and eyes.

>> Avoid any skin contact.

>> Fire may produce irritating, corrosive and/or toxic gases.

>> Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.

>> Special Hazards of Combustion Products: Poisonous vapors including hydrogen chloride gas, chlorocarbons, chlorine (USCG, 1999)

ERG 2024, Guide 152 (o-Dichlorobenzene)

>> Combustible material: may burn but does not ignite readily.

>> Containers may explode when heated.

>> Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.

>> Runoff may pollute waterways.

>> Substance may be transported in a molten form.

>> Combustible. Above 66 °C explosive vapour/air mixtures may be formed.

3. Composition/Information On Ingredients

Chemical name : 1,2-Dichlorobenzene
CAS Number : 95-50-1
Molecular Formula : C6H4Cl2
Molecular Weight : 147.0000 g/mol

4. First Aid Measures

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. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. 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. 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. Be prepared to transport the victim to a hospital if advised by a physician. 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. (NTP, 1992)

ERG 2024, Guide 152 (o-Dichlorobenzene)

>> 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:

>> Removal of solidified molten material from skin requires medical assistance.

>> In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Refer for medical attention.

Skin First Aid

>> Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Eye First Aid

>> First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Ingestion First Aid

>> Rinse mouth. Give one or two glasses of water to drink. Do NOT induce vomiting. Refer for medical attention .

5. Fire Fighting Measures

>> Poisonous gases are produced in fire

>> Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

>> SMALL FIRE: Dry chemical, CO2 or water spray.

>> LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal. Avoid aiming straight or solid streams directly onto the product.

>> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks in direct contact with flames. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2024)

>> Use water spray, powder, foam, carbon dioxide.

6. Accidental Release Measures

Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

>> Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

>> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

Evacuation: ERG 2024, Guide 152 (o-Dichlorobenzene)

>> Immediate precautionary measure

>> Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> Spill

>> For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> Fire

>> If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Accidental Release Measures

Public Safety: ERG 2024, Guide 152 (o-Dichlorobenzene)

>> CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.

>> Keep unauthorized personnel away.

>> Stay upwind, uphill and/or upstream.

Spill or Leak: ERG 2024, Guide 152 (o-Dichlorobenzene)

>> ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.

>> Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

>> Stop leak if you can do it without risk.

>> Prevent entry into waterways, sewers, basements or confined areas.

>> Cover with plastic sheet to prevent spreading.

>> Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

>> DO NOT GET WATER INSIDE CONTAINERS.

7. Handling And Storage

Safe Storage:

>> Separated from aluminium, oxidants and food and feedstuffs.

Storage Conditions:

>> Store in cool, dry, well-ventilated location. Separate from oxidizing materials.

8. Exposure Control/ Personal Protection

REL-C (Ceiling)

>> 50 ppm (300 mg/m³)

>> C 50 ppm (300 mg/m3)

PEL-C (Ceiling)

>> 50 ppm (300 mg/m³)

>> C 50 ppm (300 mg/m3)

>> 25.0 [ppm]

TLV-STEL

>> 50.0 [ppm]

>> 25 ppm as TWA; 50 ppm as STEL; A4 (not classifiable as a human carcinogen).

TLV-TWA (Time Weighted Average)

>> 25 ppm [1990]

TLV-STEL (Short Term Exposure Limit)

>> 50 ppm [1990]

EU-OEL

>> 122 mg/m

MAK (Maximale Arbeitsplatz Konzentration)

>> 61 mg/m

Emergency Response: ERG 2024, Guide 152 (o-Dichlorobenzene)

>> Small Fire

>> Dry chemical, CO2 or water spray.

>> Large Fire

>> Water spray, fog or regular foam.

>> If it can be done safely, move undamaged containers away from the area around the fire.

>> Dike runoff from fire control for later disposal.

>> Avoid aiming straight or solid streams directly onto the product.

>> Fire Involving Tanks, Rail Tank Cars or Highway Tanks

>> Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.

>> Do not get water inside containers.

>> Cool containers with flooding quantities of water until well after fire is out.

>> Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

>> ALWAYS stay away from tanks in direct contact with flames.

>> For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Inhalation Risk:

>> A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 °C.

Effects of Short Term Exposure:

>> The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the central nervous system and liver. Exposure could cause lowering of consciousness.

Effects of Long Term Exposure:

>> The substance defats the skin, which may cause dryness or cracking. The substance may have effects on the kidneys and blood.

Fire Prevention

>> NO open flames. Above 66 °C use a closed system and ventilation.

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear face shield.

Ingestion Prevention

>> Do not eat, drink, or smoke during work.

Exposure Control and Personal Protection

Protective Clothing: ERG 2024, Guide 152 (o-Dichlorobenzene)

>> Wear positive pressure self-contained breathing apparatus (SCBA).

>> Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE.

>> Structural firefighters' protective clothing provides thermal protection but only limited chemical protection.

RD50 (Exposure concentration producing a 50% respiratory rate decrease)

>> 182.0 [mmHg]

Maximum Allowable Concentration (MAK)

>> 10.0 [ppm]

9. Physical And Chemical Properties

Molecular Weight:

>> 147.00

Exact Mass:

>> 145.9690055

Physical Description:

>> O-dichlorobenzene appears as a clear colorless liquid with a pleasant odor. Denser than water and insoluble in water. Flash point 150 °F. Toxic by inhalation and ingestion. Used to make other chemicals, solvents, fumigants and insecticides and for many other uses.

>> COLOURLESS-TO-YELLOW LIQUID WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Colorless liquid

Odor:

>> Pleasant odor

Boiling Point:

>> 356.9 °F at 760 mmHg (NTP, 1992)

>> 180-183 °C

Melting Point:

>> 1 °F (NTP, 1992)

>> -17 °C

Flash Point:

>> 151 °F (NTP, 1992)

>> 66 °C c.c.

Solubility:

>> less than 1 mg/mL at 76.1 °F (NTP, 1992)

>> Solubility in water: very poor

Density:

>> 1.306 at 68 °F (USCG, 1999) - Denser than water; will sink

>> Relative density (water = 1): 1.3

Vapor Density:

>> 5.05 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 5.1

Vapor Pressure:

>> 1 mmHg at 68 °F ; 1.5 mmHg at 77 °F (NTP, 1992)

>> Vapor pressure, kPa at 20 °C: 0.16

LogP:

>> log Kow = 3.43

>> 3.38

Autoignition Temperature:

>> 1198 °F (USCG, 1999)

>> 648 °C

Decomposition:

>> When heated to decomposition it emits toxic /hydrogen/ chloride fumes.

Viscosity:

>> 1.324 mPa.s at 25 °C

Heat of Combustion:

>> -7969 Btu/lb= -4427 cal/g= -185.4X10+5 J/kg

Heat of Vaporization:

>> 311 J/g

Surface Tension:

>> 36.61 dyn/cm

Ionization Potential:

>> 9.06 eV

Odor Threshold:

>> Odor Threshold Low: 0.02 [mmHg]

>> Odor Threshold High: 50.0 [mmHg]

>> Detection odor threshold from AIHA (mean = 0.70 ppm)

10. Stability And Reactivity

>> Insoluble in water.

11. Toxicological Information

Toxicity Summary:

>> ... 1,2-Dichlorobenzene has been shown to cause eye and respiratory irritation in humans at exposure levels above 100 ppm. Skin irritation has been observed following dermal application in humans and animals. 1,2-Dichlorobenzene is absorbed via the oral route. Absorption via the dermal or inhalation routes is poorly characterized. Inhalation is expected to be the major route for human exposure. The available toxicological data indicate that metabolic profiles and effects from 1,2-dichlorobenzene exposure are similar in rats, mice and humans. Animal studies with rats and mice have shown 1,2-dichlorobenzene to induce acute hepatotoxic effects. The LD50 for a single oral exposure to 1,2-dichlorobenzene for the rat ranges from 1516 to 2138 mg/kg bw. The LC100 for the rat is </= 977 ppm (5.9 mg/L) for a 10 hour exposure. During a 4 hour exposure, 1 of 20 rats died at 941 ppm (5.6 mg/L). In humans, the acute effects of 1,2-dichlorobenzene by ingestion or inhalation are reported to be headache, nausea, vomiting, vertigo, malaise and unconsciousness. Several oral studies of rats and mice ranging from 10 days to 2 years duration indicate that the adverse effects include increases in liver and kidney weights and hepatotoxicity. From these repeat dose studies, the NOAEL for non-neoplastic effects was 60 mg/kg bw, while the LOAEL was 120 mg/kg bw due to increased renal tubular regeneration in male mice. In several microbial organisms and mammalian systems, 1,2-dichlorobenzene tested negative in vitro. However, it did induce sister chromatid exchanges in Chinese Hamster ovary cells and increased mutation frequency in mouse lymphoma cells, both in the presence of metabolic activation. 1,2-dichlorobenzene was negative in several in vivo mammalian tests, except one of two micronuclei assays in mouse bone marrow was positive. In a two-year oral study in rats and mice, 1,2-dichlorobenzene was considered not to be carcinogenic (maximum dose of 120 mg/kg bw). In an inhalation 2-generation reproduction study in rats, no fertility effects were observed and reduced pup weight during lactation occurred at doses toxic to adults. The NOAEL and LOAEL (kidney and liver effects) for adult rats were 50 (0.3 mg/L) and 150 ppm (0.6 mg/L) respectively. In developmental studies in rats and rabbits, developmental effects were only seen in rats at maternally toxic doses (400 ppm, 2.4 mg/L). No human epidemiological studies have been conducted. ... 1,2-Dichlorobenzene has been tested on a wide range of aquatic organisms under acute exposure, although chronic data are scarce. Results for fish ranged from 96 hr LC50=1.58 mg/L for rainbow trout to 57 mg/L for fathead minnow. Both acute and chronic toxicity to aquatic invertebrates were obtained with two results showing high acute toxicity, namely EC50's of 0.78 mg/L and 0.66 mg/L to Daphnia and Ceriodaphnia respectively. Results from exposure to algae showed EC50 values in the 1-100 mg/L range for 1,2-dichlorobenzene. Toxicity to microorganisms can be considered slight. Although the major compartment expected to be exposed to 1,2-dichlorobenzene is the atmosphere, there are no ecotoxicity results available for organisms exposed through the gas phase. The chlorine substituents on the chemical suggest a potential for effects on stratospheric ozone. However, the chemical is unlikely to persist long enough to escape the troposphere, although it may persist long enough to undergo long range atmospheric transport. While there are a large number of acute data covering all trophic levels, chronic data are scarce. Therefore, an assessment factor of 100 has been chosen. The result used for determining the PNEC was the lowest chronic value obtained, i.e. 21 d NOEC = 0.63 mg/L for Daphnia magna. The PNECaquatic was therefore determined to be 6.3 ug/L.

USGS Health-Based Screening Levels for Evaluating Water-Quality:

This section provides the USGS Health-Based Screening Levels for Evaluating Water-Quality data.

Chemical

>> 1,2-Dichlorobenzene

USGS Parameter Code

>> 34536

MCL (Maximum Contaminant Levels)[µg/L]

>> 600

Reference

>> Smith, C.D. and Nowell, L.H., 2024. Health-Based Screening Levels for evaluating water-quality data (3rd ed.). DOI:10.5066/F71C1TWP

Evidence for Carcinogenicity:

Evidence that this chemical does or may cause cancer. The information here is collected from various sources by the Hazardous Substances Data Bank (HSDB).

>> Evaluation: There is inadequate evidence in humans for the carcinogenicity of dichlorobenzenes. There is evidence suggesting a lack of carcinogenicity in experimental animals of ortho-dichlorobenzene. ... Overall evaluation: ortho-Dichlorobenzene is not classifiable as to its carcinogenicity to humans (Group 3). /Dichlorobenzenes/

Carcinogen Classification:

This section provides the International Agency for Research on Cancer (IARC) Carcinogenic Classification and related monograph links. In the IARC Carcinogenic classification, chemicals are categorized into four groups: Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), Group 2B (possibly carcinogenic to humans), and Group 3 (not classifiable as to its carcinogenicity to humans).

IARC Carcinogenic Agent

>> ortho-Dichlorobenzene

IARC Carcinogenic Classes

>> Group 3: Not classifiable as to its carcinogenicity 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 73: (1999) Some Chemicals that Cause Tumours of the Kidney or Urinary Bladder in Rodents and Some Other Substances

>> 3, not classifiable as to its carcinogenicity to humans. (L135)

Health Effects:

>> Inhaling the vapor or dusts of 1,2-DCB at very high concentrations could be very irritating to eyes and nose and cause burning and tearing of the eyes, coughing, difficult breathing, and an upset stomach. Ingestion of 1,2-DCB can cause effects in the kidneys and blood, and that 1,3-DCB caused thyroid and pituitary effects. (L395)

Exposure Routes:

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

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

Inhalation Exposure

>> Cough. Drowsiness. Sore throat. Unconsciousness.

Skin Exposure

>> Redness. Pain. Dry skin.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Burning sensation. Diarrhoea. Nausea. Vomiting.

>> irritation eyes, nose; liver, kidney damage; skin blisters

Target Organs:

Organs that are affected by exposure to this chemical. Information in this section reflects human data unless otherwise noted.

>> Eyes, skin, respiratory system, liver, kidneys

Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

>> Neurotoxin - Acute solvent syndrome

>> Occupational hepatotoxin - Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.

>> ACGIH Carcinogen - Not Classifiable.

Toxicity Data:

>> LCLo (rat) = 821 ppm/7H

Minimum Risk Level:

The minimal risk level (MRL) is an estimate of the amount of a chemical a person can eat, drink, or breathe each day without a detectable risk to health

>> Acute Oral: 0.7 mg/kg/day (Rat and Mouse) (L134) Intermediate Oral: 0.6 mg/kg/day (Rat and Mouse) (L134) Chronic Oral: 0.3 mg/kg/day (Rat and Mouse) (L134)

Treatment:

Treatment when exposed to toxin

>> Following oral exposure, administer charcoal as a slurry; administer oxygen to all cyanotic or symptomatic patients. In case of methemoglobinemia, administer 1 to 2 mg/kg of 1% methylene blue slowly IV in symptomatic patients; also consider adjunctive therapy. In case of inhalation exposure, move patient to fresh air; monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Following eye exposure, irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes. Following dermal exposure, skin should be thoroughly washed with soap and water; contaminated clothing and shoes should be discarded. Administer 100 percent humidified supplemental oxygen with assisted ventilation as required. Treat for methemoglobinemia and sequelae. Signs and symptoms of methemoglobinemia may be delayed. (T36)

Interactions:

>> Effect of 1,2-DCB on sulfur metabolism as measured in the urine was studied in 5 dogs given 50 mg/kg bw or 250 mg/kg bw 1,2-DCB. ...Urinary output of sulfur was increased in 1,2-DCB dosed animals compared to controls.

Antidote and Emergency Treatment:

>> Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Lindane and related compounds/

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ Vapors and sprays are irritating to eyes, nose and throat but effect seems to disappear quickly. When swallowed ... /they/ cause burning pain in stomach, nausea, vomiting and diarrhea. Hemoglobin may change to methemoglobin with resulting dusty color of skin; liver and kidney may be damaged. /Dichlorobenzenes/

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ Rats survived a single 7 hr /inhalation/ exposure to 539 ppm. These animals showed drowsiness, unsteadiness, and eye irritation. ... There was an increase in weight of liver and kidneys. Microscopic examination showed central lobular necrosis in liver and cloudy swelling of tubular epithelium of kidneys.

Non-Human Toxicity Values:

>> LD50 Guinea pig oral 0.8-2.0 ug/kg.

National Toxicology Program Studies:

Reports from the National Toxicology Program, an interagency program supported by three government agencies (NIH, FDA, and CDC) within the Department of Health and Human Services. This program plays a critical role in generating, interpreting, and sharing toxicological information about chemicals of public health concerns.

>> Two-year toxicology and carcinogenesis studies of 1,2-dichlorobenzene were conducted by administering the test chemical in corn oil gavage five times per week for 103 weeks to groups of 50 male and 50 female F344/N rats and B6C3F1 mice at doses of 60 and 120 mg/kg. Groups of 50 rats and 50 mice of each sex received corn oil by gavage on the same schedule and served as vehicle controls. Survivals of female rats, male mice, and female mice were comparable to those of the corresponding vehicle controls in the 2-year study, but survival of high dose male rats was ($P<0.001$) shorter than that of the vehicle controls. In this group there were three accidental deaths and five deaths probably due to the gavage process; in addition aspiration of 1,2-dichlorobenzene in corn oil into the lungs may have been a contributing factor to the deaths of 12 high dose male rats. The 120 mg/kg dose level of 1,2-dichlorobenzene did not affect body weight in rats or mice of either sex or survival of mice or female rats. An increase in tubular regeneration in the kidney of high dose male mice was observed in the 2-year study (control, 8/48, 17%; low dose, 12/50, 24%; high dose, 17/49, 35%). No other compound-related nonneoplastic histological lesions were noted in the 2-year study. The

incidence of pheochromocytoma of the adrenal gland in low dose male rats was elevated (P<0.05, life table test) relative to controls (9/50, 16/50, 6/49). However, the incidence in the high dose group was lower than that of the controls and the dose-response trend was not statistically significant. Therefore, the increase in pheochromocytoma in the low dose male rats is not regarded as related to administration of 1,2-dichlorobenzene. A dose-related increase (P<0.05) in malignant histiocytic lymphoma was observed in male mice (control, 0/50, 0%; low dose, 1/50, 2%; high dose, 4/50, 8%) and in female mice (0/49, 0%; 0/50, 0%; 3/49, 6%); however, comparisons of the numbers of animals with all types of lymphomas is considered to be a more appropriate comparison. 1,2-Dichlorobenzene did not increase the incidence of all types of lymphomas (combined) in male mice (8/50, 16%; 2/50, 4%; 4/50, 8%) or female mice (11/49, 22%; 11/50, 22%; 13/49, 27%). Therefore, the increase in histiocytic lymphomas was discounted. Under the conditions of these two-year gavage studies, there was no evidence of carcinogenicity of 1,2-dichlorobenzene for male or female F344/N rats or B6C3F1 mice receiving 60 or 120 mg/kg/day.

TSCA Test Submissions:

Under the Toxic Substances Control Act (TSCA), EPA has broad authority to issue regulations designed to require manufacturers (including importers) or processors to test chemical substances and mixtures for health and environmental effects. This section provides information on test reports submitted for this chemical under TSCA.

>> The effects of o-dichlorobenzene were examined in the rat hepatocyte primary culture/DNA repair assay. Based on preliminary toxicity determinations, o-dichlorobenzene was tested at concentrations of 0%, and 5 different concentrations ranging from 1x10(-7)% to 1x10(-3)% (v/v). None of the concentrations tested caused a significant increase in the unscheduled DNA synthesis over the solvent control (DMSO), and these concentrations were not genotoxic to the hepatocytes.

Populations at Special Risk:

>> Persons with existing pathology (hepatic, renal, central nervous system, blood), or metabolic disorders, who are taking certain drugs (hormones, or otherwise metabolically active) or who are otherwise exposed to dichlorobenzenes or to related (chemically or biologically) chemicals, by such means as occupation or domestic use or abuse ... might well be considered at increased risk from exposure to dichlorobenzenes. /Dichlorobenzenes/

12. Ecological Information

Resident Soil (mg/kg)

>> 1.80e+03

Industrial Soil (mg/kg)

>> 9.30e+03

Resident Air (ug/m3)

>> 2.10e+02

Industrial Air (ug/m3)

>> 8.80e+02

Tapwater (ug/L)

>> 3.00e+02

MCL (ug/L)

>> 6.00e+02

Risk-based SSL (mg/kg)

>> 3.00e-01

MCL-based SSL (mg/kg)

>> 5.80e-01

Chronic Oral Reference Dose (mg/kg-day)

>> 9.00e-02

Chronic Inhalation Reference Concentration (mg/m3)

>> 2.00e-01

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

Soil Saturation Concentration (mg/kg)

>> 3.76e+02

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish. It is strongly advised not to let the chemical enter into the environment.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> SEDIMENT: 1,2-Dichlorobenzene was detected in the sediment of Lake Ketelmeer, Netherlands at concns of 350 and 220 ng/kg(1). 1,2-Dichlorobenzene was detected in sediment off the coast of Taiwan at concns of 2-5 ng/kg(2). Mean 1,2-dichlorobenzene concns of 1,8,2 and 11 ppb were detected in the superficial sediments from Lakes Superior, Huron, Erie, and Ontario, respectively(3). 1,2-Dichlorobenzene was detected at concns of 0-516 ng/g in sediment from Ise Bay, Japan(4). 1,2-Dichlorobenzene was detected in the sediment of 7 rivers and 1 port in Niigata, Japan at concns of less than 0.03 to 1.4 ng/g(5). 1,2-Dichlorobenzene was detected at concns of 0.22 to 0.61 ug/L in suspended solids and at concentrations of 0.01 to 0.10 mg/kg in sediment from the Huaihe River, China(6). 1,2-Dichlorobenzene was detected in 0.6% of sediment samples obtained from 20 major river basins in the US (sampled from 1992-1995) at a max concn of 86 ug/kg(7).

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> 1,2-Dichlorobenzene was detected at concns of 0.3, 1, 1 and 1 ppb in trout taken from Lake Superior, Lake Huron, Lake Erie and Lake Ontario, respectively, during 1980(1). Concns of 0-4.0 ug/kg were found in flatfish off the California coast near Los Angeles(2) and a mean concn of less than 0.031 mg/kg was found in the muscle tissue of 8 seafood species caught off the California coast(2). Fish and mussels taken from rivers in Slovenia and the Gulf of Trieste (Yugoslavia) were found to contain trace levels to 1.2 ug/g of 1,2-dichlorobenzene (on a fat basis)(3).

Animal Concentrations:

Concentrations of this compound in animals.

>> 1,2-Dichlorobenzene combined with other chlorinated benzenes were identified in the blood of foxes from the Canadian Arctic(1).

Average Daily Intake:

The average amount of the compound taken into the body through eating, drinking, or breathing.

>> Based on monitoring data at three USA urban sites (Los Angeles, Phoenix, Oakland), the AVDI for 1,2-dichlorobenzene has been estimated to be 0.5-2.8 ng/day(1). The AVDI (via inhalation exposure) to combined 1,2-, 1,3- and 1,4-dichlorobenzene isomers in the Netherlands is 7.0 ug/day(2).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Disposal Methods

>> Generators of waste (equal to or greater than 100 kg/month) containing this contaminant, EPA hazardous waste number U070 & F002, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> ... Halogenated compounds may be disposed of by incineration provided they are blended with other compatible wastes or fuels so that the composite contains less than 30% halogens and the heating value is from 7000 to 9000 BTU/lb.

Liquid injection, rotary kiln, and fluidized bed incinerators are typically used to destroy liquid halogenated wastes. ... Temperatures of at least 2000 - 2200 °F and residence times /of more than 2 sec/ ... are required for the destruction of halogenated aromatic hydrocarbons.

>> Potential candidate for rotary kiln incineration, with a temperature range of 820 to 1,600 °C, and a residence time of seconds. Also a potential candidate for liquid injection incineration, with a temperature range of 650 to 1,600 °C, and a residence time of 0.1 to 2 seconds.

>> Chemical Treatability of 1,2-Dichlorobenzene; Concentration Process: Stripping; Chemical Classification: Aromatic; Scale of Study: Full Scale, Continuous Flow; Type of Wastewater Used: Domestic Wastewater; Results of Study: 70% reduction by air stripping.

14. Transport Information

DOT

1,2-Dichlorobenzene
6.1
UN Pack Group: III
Reportable Quantity of 100 lb or 45

IATA

1,2-Dichlorobenzene
6.1,
UN Pack Group: III

15. Regulatory Information

Federal Drinking Water Guidelines:

Federal drinking water guidelines (e.g. maximum containment level (MCL)) for this chemical. In general, these guidelines are recommendations and not legally enforceable.

>> EPA 600 ug/L

State Drinking Water Standards:

State drinking water standards (e.g. maximum containment level (MCL)) for this chemical. These standards are legally enforceable.

>> (NJ) NEW JERSEY 600 ug/L

Clean Water Act Requirements:

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under CWA, the U.S. Environmental Protection Agency (EPA) developed the Toxic Pollutant List (40 CFR Part 401.15) and the Priority Pollutant List (40 CFR Part 423, Appendix A). These lists are to be used by EPA and States to develop the Effluent Guidelines regulations and ensure water quality criteria and standards.

>> o-Dichlorobenzene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

TSCA Requirements:

This section provides information on requirements concerning this chemical under the Toxic Substances Control Act (TSCA) of 1976. TSCA provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

>> Pursuant to section 8(d) of TSCA, EPA promulagated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to

EPA copies and lists of unpublished health and safety studies. 1,2-Dichlorobenzene is included on this list. Effective date 10/4/82; Sunset date 10/4/92.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Benzene, 1,2-dichloro-

>> Specific Information Requirement: Obligations to provide information apply. You must tell us within 28 days if the circumstances of your importation or manufacture (introduction) are different to those in our assessment.

REACH Registered Substance

>> Status: Active Update: 13-03-2023 https://echa.europa.eu/registration-dossier/-/registered-dossier/13734

>> Status: Active Update: 03-05-2018 https://echa.europa.eu/registration-dossier/-/registered-dossier/23519

>> Status: Active Update: 03-09-2013 https://echa.europa.eu/registration-dossier/-/registered-dossier/8188

New Zealand EPA Inventory of Chemical Status

>> 1,2-Dichlorobenzene: Does not have an individual approval but may be used under an appropriate group standard

16. Other Information

Toxic Combustion Products:

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> Combustion may produce irritants and toxic gases. Combustion by-products include hydrogen chloride, phosgene, and chlorocarbons. Fire may be smoky due to incomplete combustion.

Other Safety Information

Chemical Assessment

>> PEC / SN / Other assessments - ortho-Dichlorobenzene: Health and Environment

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."