ionz

SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Benzyl Chloride
Catalog Number : io-1815
CAS Number : 100-44-7
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)

Pictogram(s)

GHS Hazard Statements

>> H302 (100%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H315 (100%): Causes skin irritation [Warning Skin corrosion/irritation]

>> H317 (18%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H318 (100%): Causes serious eye damage [Danger Serious eye damage/eye irritation]

>> H331 (99.9%): Toxic if inhaled [Danger Acute toxicity, inhalation]

>> H335 (99.9%): May cause respiratory irritation [Warning Specific target organ toxicity, single exposure; Respiratory tract irritation]

>> H350 (99.9%): May cause cancer [Danger Carcinogenicity]

>> H373 (99.9%): 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, P272, P280, P301+P317, P302+P352, P304+P340, P305+P354+P338, P316, P317, P318, P319, P321, P330, P332+P317, P333+P317, P362+P364, P403+P233, P405, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 3 - Materials that, under emergency conditions, can cause serious or permanent 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

>> 1 - Materials that in themselves are normally stable but that can become unstable at elevated temperatures and pressures.

Health Hazards:

>> Intensely irritating to skin, eyes, and mucous membranes. Highly toxic; may cause death or permanent injury after very short exposure to small quantities. Has been listed as a direct-acting or primary carcinogen. Large doses cause central nervous system depression. (EPA, 1998)

ERG 2024, Guide 156 (Benzyl chloride)

>> TOXIC and/or CORROSIVE; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.

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

>> Reaction with water or moist air may release toxic, corrosive or flammable gases.

>> Reaction with water may generate much heat that will increase the concentration of fumes in the air.

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

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

>> It burns but does not ignite readily. It may ignite combustibles. When heated to decomposition, it emits toxic and corrosive fumes. Some organic chlorides decompose to yield phosgene. Incompatible with active metals such as copper, aluminum, magnesium, iron, zinc, and tin and keep from strong oxidizing agents. Avoid contact with acids or acid fumes. Keep separate from oxidizing materials. May become unstable at elevated temperatures and pressures; may react with water resulting in some nonviolent release of energy. Polymerizes with evolution of heat and hydrogen chloride when in contact with all common metals except nickel and lead. (EPA, 1998)

ERG 2024, Guide 156 (Benzyl chloride)

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

>> Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.

>> When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.

>> Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).

>> Vapors may travel to source of ignition and flash back.

>> Corrosives in contact with metals may evolve flammable hydrogen gas.

>> Containers may explode when heated or if contaminated with water.

>> Combustible. Gives off irritating or toxic fumes (or gases) in a fire. Above 67 °C explosive vapour/air mixtures may be formed.

3. Composition/Information On Ingredients

Chemical name : Benzyl Chloride
CAS Number : 100-44-7
Molecular Formula : C7H7Cl
Molecular Weight : 126.5800 g/mol

4. First Aid Measures

First Aid:

>> Signs and Symptoms of Acute Benzyl Chloride Exposure: Benzyl chloride may be very irritating to the skin, eyes, and mucous membranes. Eye irritation may be severe, and permanent eye damage may result. Lacrimation (tearing) is

common. Other signs and symptoms of acute exposure may include headache, dizziness, weakness, fatigue, irritability, itching of the skin, profuse sweating, insomnia, tremors, unsteadiness, and central nervous system depression. Gastrointestinal effects may include nausea, vomiting, cramps, anorexia, and diarrhea. Pulmonary edema and disturbance of liver function may also occur.

>> Emergency Life-Support Procedures: Acute exposure to benzyl chloride may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary. Rescue vehicles should carry supplies such as plastic sheeting and disposable plastic bags to assist in preventing spread of contamination.

>> Inhalation Exposure:

>> 1. Move victims to fresh air. Emergency personnel should avoid self-exposure to benzyl chloride.

>> 2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.

>> 3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 4. Transport to a health care facility.

>> Dermal/Eye Exposure:

>> 1. Remove victims from exposure. Emergency personnel should avoid self- exposure to benzyl chloride.

>> 3. Remove contaminated clothing as soon as possible.

>> 4. If eye exposure has occurred, eyes must be flushed with lukewarm water for at least 15 minutes.

>> 5. Wash exposed skin areas THOROUGHLY with soap and water.

>> 6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 7. Transport to a health care facility.

>> Ingestion Exposure:

>> 1. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.

>> 2. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 3. Give the victims water or milk: children up to 1 year old, 125 mL (4 oz or 1/2 cup); children 1 to 12 years old, 200 mL (6 oz or 3/4 cup); adults, 250 mL (8 oz or 1 cup). Water or milk should be given only if victims are conscious and alert.

>> 4. Activated charcoal may be administered if victims are conscious and alert. Use 15 to 30 g (1/2 to 1 oz) for children, 50 to 100 g (1-3/4 to 3-1/2 oz) for adults, with 125 to 250 mL (1/2 to 1 cup) of water.

>> 5. Promote excretion by administering a saline cathartic or sorbitol to conscious and alert victims. Children require 15 to 30 g (1/2 to 1 oz) of cathartic; 50 to 100 g (1-3/4 to 3-1/2 oz) is recommended for adults.

>> 6. Transport to a health care facility. (EPA, 1998)

ERG 2024, Guide 156 (Benzyl chloride)

>> 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:

>> For corrosives, in case of contact, immediately flush skin or eyes with running water for at least 30 minutes. Additional flushing may be required.

>> 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. Half-upright position. 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. Refer for medical attention .

5. Fire Fighting Measures

>> Areas may be entered freely with full-faced mask, self-contained breathing apparatus which provides eye protection, rubber gloves, and hand and arm protection.

>> Use water spray, dry chemical, foam, or carbon dioxide. Use water to keep fire-exposed containers cool. (EPA, 1998)

>> Use powder, AFFF, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

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 156 [Substances - Toxic and/or Corrosive (Combustible / Water-Sensitive)]:

>> 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 156 (Benzyl chloride)

>> 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: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered non-metallic 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 156 (Benzyl chloride)

>> 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.

>> Ventilate closed spaces before entering, but only if properly trained and equipped.

Spill or Leak: ERG 2024, Guide 156 (Benzyl chloride)

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

>> All equipment used when handling the product must be grounded.

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

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

>> A vapor-suppressing foam may be used to reduce vapors.

>> FOR CHLOROSILANES, use alcohol-resistant foam to reduce vapors.

>> DO NOT GET WATER on spilled substance or inside containers.

>> Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

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

>> Small Spill

>> Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

>> Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

7. Handling And Storage

Safe Storage:

>> Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Dry. Ventilation along the floor. Store only if stabilized.

Storage Conditions:

>> Separated from food and feedstuffs and incompatible materials . Ventilation along the floor. Store only if stabilized.

8. Exposure Control/ Personal Protection

REL-C (Ceiling)

>> 1 ppm [15 minute]

>> C 1 ppm (5 mg/m3) [15-minute]

>> 1.0 [ppm]

PEL-TWA (8-Hour Time Weighted Average)

>> 1 ppm (5 mg/m³)

>> 1.0 [ppm]

TLV-TWA (Time Weighted Average)

>> 1 ppm [1990]

MAK (Maximale Arbeitsplatz Konzentration)

>> skin absorption (H); carcinogen category: 2

Emergency Response: ERG 2024, Guide 156 (Benzyl chloride)

>> Note: Most foams will react with the material and release corrosive/toxic gases.

>> CAUTION: For Acetyl bromide (UN1716), use CO2 or dry chemical only.

>> Small Fire

>> CO2, dry chemical, dry sand, alcohol-resistant foam.

>> Large Fire

>> Water spray, fog or alcohol-resistant foam.

>> FOR CHLOROSILANES, DO NOT USE WATER; use alcohol-resistant foam.

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

>> 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.

>> ERPG-1: 1 ppm - one hour exposure limit: 1 = mild transient health effects or objectionable odor [AIHA]

>> ERPG-2: 10 ppm - one hour exposure limit: 2 = impaired ability to take protective action [AIHA]

>> ERPG-3: 50 ppm - one hour exposure limit: 3 = life threatening health effects [AIHA]

Inhalation Risk:

>> A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20 °C , on spraying much faster.

Effects of Short Term Exposure:

>> The substance is corrosive to the eyes. The vapour is irritating to the eyes, skin and respiratory tract. Inhalation of the vapour or aerosol may cause lung oedema. The substance may cause effects on the central nervous system. This may result in unconsciousness.

Effects of Long Term Exposure:

>> The substance may have effects on the liver and kidneys. This may result in tissue lesions. This substance is possibly carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Fire Prevention

>> NO open flames. Above 67 °C use a closed system and ventilation.

Exposure Prevention

>> AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear safety goggles or eye protection in combination with breathing protection.

Ingestion Prevention

>> Do not eat, drink, or smoke during work. Wash hands before eating.

Exposure Control and Personal Protection

Protective Clothing: ERG 2024, Guide 156 (Benzyl chloride)

>> 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)

>> 17.0 [mmHg]

9. Physical And Chemical Properties

Molecular Weight:

>> 126.58

Exact Mass:

>> 126.0236279

Physical Description:

>> Benzyl chloride appears as a colorless liquid with an irritating odor. Toxic by inhalation and skin absorption. Flash point 153 °F. Slightly soluble in water. Corrosive to metals and tissue. A lachrymator. Density 9.2 lb /gal.

>> COLOURLESS LIQUID WITH PUNGENT ODOUR.

Color/Form:

>> Colorless to slightly yellow liquid

Odor:

>> Rather unpleasant, irritating odor

Boiling Point:

>> 354 °F at 760 mmHg (EPA, 1998)

>> 179 °C

Melting Point:

>> -54 to -45 °F (EPA, 1998)

>> ~-43 °C

Flash Point:

>> 153 °F (EPA, 1998)

>> 67 °C c.c.

Solubility:

>> Reaction (NTP, 1992)

>> Solubility in water, g/100ml:

Density:

>> 1.1 at 68 °F (EPA, 1998) - Denser than water; will sink

>> Relative density (water = 1): 1.1

Vapor Density:

>> 4.4 (EPA, 1998) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 4.4

Vapor Pressure:

>> 1 mmHg at 71.6 °F (EPA, 1998)

>> Vapor pressure, Pa at 20 °C: 120

LogP:

>> log Kow = 2.30

>> 2.3

Stability/Shelf Life:

>> Stablity during transport: stable

Autoignition Temperature:

>> 1161 °F (USCG, 1999)

>> 585 °C

Decomposition:

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

Corrosivity:

The ability of a chemical to damage or destroy other substances when it comes into contact.

>> Corrosive to metal ... .

Heat of Combustion:

>> 3708 kJ/mol at constant volume

Heat of Vaporization:

>> 50.1 kJ/mol at 25 °C

Surface Tension:

>> 37.46 dynes/cm at 20.6 °C; 36.76 dynes/cm at 26.3 °C

Polymerization:

Polymerization is a process of reacting monomer molecules together in a chemical reaction to form polymer chains or three-dimensional networks.

>> Polymerizes with evolution of heat and hydrogen chloride when in contact with all common metals except nickel and lead.

Odor Threshold:

>> Odor Threshold Low: 0.04 [mmHg]

>> Odor Threshold High: 0.04 [mmHg]

>> Detection odor threshold from AIHA (mean = 0.041 ppm)

Refractive Index:

>> Index of refraction: 1.5391 at 20 °C/D

10. Stability And Reactivity

>> A lachrymator. Slightly soluble in water.

11. Toxicological Information

Toxicity Summary:

>> Toxic by all routes (ie, oral, dermal, inhalation), exposure to benzyl chloride may occur occupationally at sites where the substance is used as a chemical intermediate in the synthesis of a wide range of commercial products (eg, dyes, perfumes, resins, plasticizers, and pesticides), or environmentally, from air contaminated by industrial sources,

incinerators, and certain floor tiles. This colorless to slightly yellow liquid is an extreme irritant to skin, eyes, and mucous membranes. Symptomatology may include severe irritation of the upper respiratory tract (with coughing), conjuctivitis, dizziness, weakness, headache, tremors in eyelids and fingers, increased bilirubin in blood, and decrease in number of leukocytes. Lung damage, pulmonary edema, permanent eye damage, and CNS depression are all possible from severe exposure. While listed in one source as an example of primary carcinogen, IARC reports that inadequate evidence in humans, and only limited evidence in animals prevents benzyl chloride from being classified as to its carcinogenicity to humans. Acute oral dosing of rats led to severe gastritis, hyperkeratosis and hyperplasia of the squamouns stomach, and progressive lesions of the heart (including necrosis of myocardial fibers). In short-term tests, skin sensitization was show in guinea pigs, and both eye and respiratory tract irritation in cats and rabbits. Benzyl chloride tested positive for mutagenicity in Salmonella, E coli, hamster embryonal cell transformation, and S cerevisiae recombination assays. Also, benzyl chloride, given iv to male mice, caused an increase in the degree of alkylation of DNA in the lung, and alkylation of hemoglobin. BD rats, given weekly sc injections of benzyl chloride for 51 weeks, developed injection site sarcomas; with most animals experiencing lung metastases, as well. Another study with sc injected rats, also reported massive local sarcomas. However, benzyl chloride applied twice weekly to the shaved dorsal region of Swiss albino mice for seven months, resulted in no discernible neoplastic changes. A/HE mice, of both sexes, after receiving ip injections thrice weekly for 24 weeks, experienced a statistically insignificant incidence of lung tumors. Benzyl chloride, given orally to Wistar rats from 1-19 days of gestation, produced a high incidence of embryolethality and retarded development in surviving offspring; but, no malformations. Likewise, benzyl chloride, given orally to female Sprague-Dawley rats from day 6 through 15 of gestation, resulted in reduced fetal length, but no toxic symptoms and no major skeletal or visceral abnormalities were seen. Benzyl chloride is absorbed through the lung and gut. Studies with rats showed urinary excretion 80-90% of the substance to occur in 24 hours. Products of benzyl chloride metabolism have been reported to include benzyl mercapturic acid and s-benzylgluthione.

EPA Provisional Peer-Reviewed Toxicity Values:

This section provides the EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs) and links of related assessment documents.

Chemical Substance

>> Benzyl Chloride

Reference Dose (RfD), Chronic

>> 2 x 10^-3 mg/kg-day

Reference Dose (RfD), Subchronic

>> 2 x 10^-3 mg/kg-day

Reference Concentration (RfC), Chronic

>> 1 x 10^-3 mg/m^3

Reference Concentration (RfC), Subchronic

>> 4 x 10^-3 mg/m^3

PPRTV Assessment

>> PDF Document

Weight-Of-Evidence (WOE)

>> See the IRIS entry for Benzyl Chloride

Last Revision

>> 2008

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 limited evidence in humans for the carcinogenicity of alpha-chlorinated toluenes and benzoyl chloride. There is sufficient evidence in experimental animals for the carcinogenicity of benzyl chloride. ... Overall evaluation: Combined exposures to alpha-chlorinated toluenes and benzoyl chloride are probably carcinogenic to humans (Group 2A). /alpha-Chlorinated toluenes & benzoyl chloride/

Exposure Routes:

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

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

Inhalation Exposure

>> Burning sensation. Cough. Nausea. Headache. Shortness of breath. Dizziness.

Skin Exposure

>> MAY BE ABSORBED! Redness. Pain.

Eye Exposure

>> Watering of the eyes. Redness. Pain. Blurred vision. Severe deep burns.

Ingestion Exposure

>> Abdominal pain. Diarrhoea. Vomiting. Burning sensation.

>> irritation eyes, skin, nose; lassitude (weakness, exhaustion); irritability; headache; skin eruption; pulmonary edema

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, central nervous system

Cancer Sites:

The site in which cancer develops due to exposure to this compound. Cancers are casually referred to based on their primary sites (e.g., skin, lung, breasts, prostate, colon and rectum).

>> Endocrine

Adverse Effects:

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

>> Neurotoxin - Other CNS neurotoxin

>> 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.

>> Dermatotoxin - Skin burns.

>> Lacrimator (Lachrymator) - A substance that irritates the eyes and induces the flow of tears.

>> Toxic Pneumonitis - Inflammation of the lungs induced by inhalation of metal fumes or toxic gases and vapors.

>> IARC Carcinogen - Class 2: International Agency for Research on Cancer classifies chemicals as probable (2a), or possible (2b) human carcinogens.

>> ACGIH Carcinogen - Confirmed Animal.

Toxicity Data:

>> LC50 (rat) = 150 ppm/2H

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. /Aromatic hydrocarbons and related compounds/

Human Toxicity Excerpts:

>> /HUMAN EXPOSURE STUDIES/ ... Concentrations of 6-8 mg/cu m cause a slight conjunctivitis after 5 min of exposure. Airborne concentration of 50-100 mg/cu m ... Cause weeping and twitching of eyelids and in concentration of 160 mg/cu m it is unbearably irritating to the eyes & mucous membranes of the nose.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ It is a strong skin sensitizing agent for guinea-pigs & leukopenia has also been observed.

Non-Human Toxicity Values:

>> LD50 Mouse oral 1500 mg/kg

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.

>> Benzyl Chloride (100-44-7) was administered to groups of inseminated New Zealand White rabbits (17 does/group) by gavage at dose levels of 0, 10, or 30 mg/kg body weight on gestation days 6-18 (the day of insemination was gestation

day 0). All females were sacrificed on gestation day 29. No mortalities or clinical signs attributable to benzyl chloride were reported for any group. Body weight gain among treated animals during dosing and throughout gestation was comparable to those from controls. There were no treatment related effects reported for the number of implantation sites, number of resorptions, number of live young, or the number of aborted fetuses in any group. The mean body weights of fetuses from treated does were comparable to controls. Examination of the fetuses for external, internal, and skeletal developmental abnormalities revealed no treatment or dose-related effects.

Populations at Special Risk:

>> Those individuals with preexisting eye, skin, allergic, liver or kidney disease or preexisting respiratory conditions including underlying cardiopulmonary disease may be more sensitive to the effects of benzyl chloride exposure. Persons exposed to other irritants might /also/ be more sensitive.

12. Ecological Information

Resident Soil (mg/kg)

>> 1.10e+00

Industrial Soil (mg/kg)

>> 4.80e+00

Resident Air (ug/m3)

>> 5.70e-02

Industrial Air (ug/m3)

>> 2.50e-01

Tapwater (ug/L)

>> 8.90e-02

MCL (ug/L)

>> 5.00e+00

Risk-based SSL (mg/kg)

>> 9.8e-05

Oral Slope Factor (mg/kg-day)-1

>> 1.70e-01

Inhalation Unit Risk (ug/m3)-1

>> 4.9e-05

Chronic Oral Reference Dose (mg/kg-day)

>> 2.00e-03

Chronic Inhalation Reference Concentration (mg/m3)

>> 1.00e-03

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

Soil Saturation Concentration (mg/kg)

>> 1.46e+03

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> Benzyl chloride has been detected, not quantified in the soil-sediment-water matrix of the Love Canal near Niagara, NY(1).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered non-metallic 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/mo) containing this contaminant, EPA hazardous waste number P028, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> 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.

>> Incineration at 1500 °F for 0.5 sec minimum for primary combustion and 2200 °F for 12.0 sec for secondary combustion. Elemental chlorine formation may be alleviated by injection of steam or methane into the combustion process.

>> A good candidate for liquid injection incineration at a temperature range of 650 to 1,600 °C and a residence time of 0.1 to 2 seconds. A good candidate for rotary kiln incineration at a temperature range of 820 to 1,600 °C and residence times of seconds for liquids and gases, and hours for solids.

14. Transport Information

DOT

Benzyl Chloride
6.1
UN Pack Group: II
Reportable Quantity of 100 lb or 45

IATA

Benzyl Chloride
6.1, 8
UN Pack Group: II

15. Regulatory Information

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.

>> Benzyl chloride 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.

>> Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329. Effective date: 3/11/94; Reporting date: 5/10/94.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Benzene, (chloromethyl)-

DEA Listed Chemicals

>> List II Chemical: A chemical, other than a List I chemical, specified by regulation that, in addition to legitimate uses, is used in manufacturing a controlled substance in violation of the Act.

REACH Registered Substance

>> Status: Active Update: 29-05-2013 https://echa.europa.eu/registration-dossier/-/registered-dossier/10666

REACH Registered Substance

>> Status: Active Update: 22-08-2022 https://echa.europa.eu/registration-dossier/-/registered-dossier/14202

New Zealand EPA Inventory of Chemical Status

>> Benzyl chloride: HSNO Approval: HSR002910 Approved with controls

16. Other Information

Other Safety Information

Chemical Assessment

>> IMAP assessments - Benzene, (chloromethyl)-: Human health tier II assessment

"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."