SAFETY DATA SHEET

Updated on 11/05/2025

1. Material Identification

Product Name : Hexachlorobenzene
Catalog Number : io-2470
CAS Number : 118-74-1
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)

Pictogram(s)

GHS Hazard Statements

>> H350 (100%): May cause cancer [Danger Carcinogenicity]

>> H372 (100%): Causes damage to organs through prolonged or repeated exposure [Danger Specific target organ toxicity, repeated exposure]

>> H400 (98.3%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (100%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P203, P260, P264, P270, P273, P280, P318, P319, P391, P405, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 1 - Materials that, under emergency conditions, can cause significant irritation.

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.

Health Hazards:

>> Harmful by dust inhalation or if swallowed. Irritating to eyes, skin and mucous membranes. Prolonged periods of ingestion may cause cutaneous porphyria. (USCG, 1999)

ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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: They contain highly toxic chloride fumes.

>> Behavior in Fire: Produces highly toxic chloride fumes. (USCG, 1999)

ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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. Gives off irritating or toxic fumes (or gases) in a fire.

3. Composition/Information On Ingredients

Chemical name : Hexachlorobenzene
CAS Number : 118-74-1
Molecular Formula : C6Cl6
Molecular Weight : 284.8000 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. 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. 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.

>> 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)

ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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.

Skin First Aid

>> Rinse and then wash skin with water and soap.

Eye First Aid

>> Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention if irritation persists.

Ingestion First Aid

>> Rinse mouth. Seek medical attention if you feel unwell.

5. Fire Fighting Measures

>> 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, foam, powder, 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 (Hexachlorobenzene)

>> 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 and particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Accidental Release Measures

Public Safety: ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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 (Hexachlorobenzene)

>> 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 food and feedstuffs. Well closed. Store only in original container. Store in an area without drain or sewer access.

Storage Conditions:

>> Separated from food and feedstuffs. Well closed.

8. Exposure Control/ Personal Protection

>> 0.002 [mg/m3]

>> 0.002 mg/m

TLV-TWA (Time Weighted Average)

>> 0.002 mg/m³ [1994]

MAK (Maximale Arbeitsplatz Konzentration)

>> skin absorption (H); carcinogen category: 4; pregnancy risk group: D

Emergency Response: ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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 concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

Effects of Short Term Exposure:

>> May cause mechanical irritation to the eyes (as a solid) and respiratory tract.

Effects of Long Term Exposure:

>> The substance may have effects on the liver, nervous system and skin. This may result in impaired functions of organs and skin lesions. This substance is possibly carcinogenic to humans. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

Fire Prevention

>> NO open flames. See Chemical Dangers.

Exposure Prevention

>> PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!

Inhalation Prevention

>> Use local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear face shield or eye protection in combination with breathing protection.

Ingestion Prevention

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

Exposure Control and Personal Protection

Protective Clothing: ERG 2024, Guide 152 (Hexachlorobenzene)

>> 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.

Exposure Summary

>> TIH (Toxic Inhalation Hazard) - Term used to describe gases and volatile liquids that are toxic when inhaled. Some are TIH materials themselves, e.g., chlorine, and some release TIH gases when spilled in water, e.g., chlorosilanes. [ERG 2016].

9. Physical And Chemical Properties

Molecular Weight:

>> 284.8

Exact Mass:

>> 283.810166

Physical Description:

>> Hexachlorobenzene appears as a white crystalline substance. Insoluble in water and denser than water. Contact may irritate skin, eyes and mucous membranes. May be toxic by ingestion. Used to make other chemicals.

>> COLOURLESS-TO-WHITE NEEDLE-LIKE CRYSTALS.

Color/Form:

>> White needles

Boiling Point:

>> 612 °F at 760 mmHg (sublimes) (NTP, 1992)

>> 323-326 °C

Melting Point:

>> 441 to 444 °F (NTP, 1992)

>> 231 °C

Flash Point:

>> 468 °F (NTP, 1992)

>> 242 °C c.c.

Solubility:

>> less than 1 mg/mL at 68 °F (NTP, 1992)

>> Solubility in water, g/l:

Density:

>> 2.044 at 75.2 °F (USCG, 1999) - Denser than water; will sink

>> 2.0 g/cm³

Vapor Density:

>> 9.8 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 9.8

Vapor Pressure:

>> 1 mmHg at 237.9 °F ; 0.0000109 mmHg at 68 °F (NTP, 1992)

>> Vapor pressure, Pa at 20 °C: 0.001

LogP:

>> log Kow = 5.73

>> 5.5/6.2

Stability/Shelf Life:

>> Very stable, even to acids and bases.

Decomposition:

>> Dangerous; When heated to decomposition, emits toxic fumes of /hydrogen chloride/.

Heat of Combustion:

>> -2372 kJ/mol

Heat of Vaporization:

>> 49 kJ/mol at 20 °C

10. Stability And Reactivity

>> This chemical is sensitive to moisture. Insoluble in water.

11. Toxicological Information

Toxicity Summary:

>> Based on representative levels of hexachlorobenzene in air, water, and food, the total intake of hexachlorobenzene by adults in the general population ... is predominantly from the diet. ... Hexachlorobenzene is readily absorbed by the oral route in experimental animals and poorly via the skin. ... In animals and humans, hexachlorobenzene accumulates in lipid-rich tissues, such as adipose tissue, adrenal cortex, bone marrow, skin and some endocrine tissues, and can be transferred to offspring both across the placenta and via mothers' milk. Hexachlorobenzene undergoes limited metabolism, yielding pentachlorophenol, tetrachlorohydroquinone and pentachlorothiophenol as the major metabolites in urine.... The acute toxicity of hexachlorobenzene to experimental animals is low ... In animal studies, hexachlorobenzene is not a skin or eye irritant ... The available data on the systemic toxicity of hexachlorobenzene indicate that the pathway for the biosynthesis of heme is a major target of hexachlorobenzene toxicity. Elevated levels of porphyrin and/or porphyrin precursors have been found in the liver, other tissues and excreta of several species of laboratory mammals ... Porphyria has been reported in a number of studies in rats with subchronic or chronic oral exposure ... Repeated exposure to hexachlorobenzene has also been shown to affect a wide range of organ systems (including the liver, lungs, kidneys, thyroid, skin and nervous and immune systems) although these have been reported less frequently than porphyria. Hexachlorobenzene is a mixed-type cytochrome P-450-inducing compound, with phenobarbital-inducible and 3-methylcholanthrene-inducible properties. It is known to bind to the Ah receptor. ... The carcinogenicity of hexachlorobenzene has been assessed in several adequate bioassays on rodents. ... There were increases in the incidence of liver cell tumors (hepatoma) ... hemangioendotheliomas of the liver ... adenomas of the thyroid ... neoplastic liver nodules and adrenal pheochromocytomas ... parathyroid adenomas ... renal cell adenomas ... hepatocellular carcinomas, bile duct adenomas/carcinomas ... and adrenal cortical adenomas. ... Hexachlorobenzene has little capability to induce directly gene mutation, chromosomal damage and DNA repair. It exhibited weak mutagenic activity ... There is also some evidence of low-level binding to DNA in vitro and in vivo, but at levels well below those expected for genotoxic carcinogens. In studies of reproduction .... /suggest/ specificity of hexachlorobenzene within the site of the ovary. ... The results of a number of studies have indicated that hexachlorobenzene affects the immune system .... Most data on the effects of hexachlorobenzene on humans originate from accidental poisonings that took place in Turkey in 1955-1959, in which more than 600 cases of porphyria cutanea tarda were identified. In this incident, disturbances in porphyrin metabolism, dermatological lesions, hyperpigmentation, hypertrichosis, enlarged liver, enlargement of the thyroid gland and lymph nodes, and (in roughly half the cases) osteoporosis or arthritis were observed, primarily in children. Breast-fed infants of mothers exposed to hexachlorobenzene in this incident developed a disorder called pembe yara (pink sore) and most died within a year. There is also limited evidence that porphyria cutanea tarda occurs in humans with relatively high exposure to hexachlorobenzene in the workplace or in the general

environment. The few available epidemiological studies of cancer ... are insufficient to assess the carcinogenicity of hexachlorobenzene to humans. ... There are few experimental studies on which an environmental risk assessment can be made. ... However, hexachlorobenzene concentrations ... /suggest/ that hexachlorobenzene has the potential to harm embryos of sensitive bird species ... /and/ to cause adverse effects in ... fish-eating mammals..

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

>> Hexachlorobenzene

Reference Dose (RfD), Subchronic

>> 1 x 10^-5 mg/kg-day

PPRTV Assessment

>> PDF Document

Weight-Of-Evidence (WOE)

>> See the IRIS entry for Hexachlorobenzene

Last Revision

>> 2010

RAIS Toxicity Values:

This section provides the Chemical toxicity information from the Risk Assessment Information System.

Inhalation Unit Risk (IUR) (ug/m^3)^-1

>> 0.00046

Inhalation Unit Risk Reference

>> IRIS Current

Oral Acute Reference Dose (RfDoa)(mg/kg-day)

>> 0.008

Oral Acute Reference Dose Reference

>> ATSDR Final

Oral Chronic Reference Dose (RfDoc) (mg/kg-day)

>> 1e-05

Oral Chronic Reference Dose Reference

>> PPRTV Memo

Oral Subchronic Chronic Reference Dose (RfDos) (mg/kg-day)

>> 1e-05

Oral Subchronic Chronic Reference Dose Reference

>> PPRTV Current

Short-term Oral Reference Dose (RfDot) (mg/kg-day)

>> 0.0001

Short-term Oral Reference Dose Reference

>> ATSDR Final

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

>> 1.6

Oral Slope Factor Reference

>> IRIS Current

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

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

Chemical

>> Hexachlorobenzene

MCL (Maximum Contaminant Levels)[µg/L]

>> 1

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 hexachlorobenzene. There is sufficient evidence in experimental animals for the carcinogenicity of hexachlorobenzene. Overall evaluation: Hexachlorobenzene is possibly carcinogenic to humans (Group 2B).

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

>> Hexachlorobenzene

IARC Carcinogenic Classes

>> Group 2B: Possibly 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 79: (2001) Some Thyrotropic Agents

>> 2B, possibly carcinogenic to humans. (L135)

Health Effects:

>> Chronic exposure to hexachlorobenzene can damage the liver, thyroid, nervous system, bones, kidneys, blood, and immune and endocrine systems. It also causes a syndrome, called black sore, that is characterized by dermal blistering and epidermolysis, pigmentation and scarring, alopecia, photosensitivity, hepatomegaly, porphyria, suppurative arthritis, osteomyelitis, and osteoporosis of the bones of the hands. It may also cause a liver disease called porphyria cutanea tarda. This disease can cause red-colored urine, skin sores, change in skin color, arthritis, and problems of the liver, nervous system, and stomach. Hexachlorobenzene also affects development and results in lower survival rates of children of exposed mothers. It is also believed to be a human carcinogen. (T10, L225)

Exposure Routes:

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

>> Oral (L225); inhalation (L225) ; dermal (L225)

Skin Exposure

>> MAY BE ABSORBED!

>> Hexachlorobenzene causes a syndrome, called black sore, that is characterized by dermal blistering and epidermolysis, pigmentation and scarring, alopecia, photosensitivity, hepatomegaly, porphyria, suppurative arthritis, osteomyelitis, and osteoporosis of the bones of the hands. It may also cause a liver disease called porphyria cutanea tarda. This disease can cause red-colored urine, skin sores, change in skin color, arthritis, and problems of the liver, nervous system, and stomach. (L225)

Target Organs:

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

>> Cancer, Developmental (effects during periods when organs are developing) , Hepatic (Liver), Neurological (Nervous System), Reproductive (Producing Children)

>> Hepatic

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).

>> Hepatic

Adverse Effects:

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

>> 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.

>> Other Poison - Organochlorine

>> Reproductive Toxin - A chemical that is toxic to the reproductive system, including defects in the progeny and injury to male or female reproductive function. Reproductive toxicity includes developmental effects. See Guidelines for Reproductive Toxicity Risk Assessment.

>> IARC Carcinogen - Class 3: Chemicals are not classifiable by the International Agency for Research on Cancer.

>> NTP Carcinogen - Reasonably anticipated to be a human carcinogen.

>> ACGIH Carcinogen - Confirmed Animal.

Toxicity Data:

>> LC50 (rat) = 3,600 mg/m3

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: 0.008 mg/kg/day (L134) Intermediate Oral: 0.0001 mg/kg/day (L134) Chronic Oral: 0.00005 mg/kg/day (L134)

Treatment:

Treatment when exposed to toxin

>> Treatment is mainly symptomatic and may include gastric lavage, administering activated charcoal, and controlling convulsions. (L226)

Interactions:

>> Hexachlorobenzene (HCB) 0.02% diet + diethylstilbestrol dipropionate 6 mg/kg ip or chlorotrianisene 5 mg gave more male rat liver porphyrin than HCB only. Diethylstilbestrol dipropionate or chlorotrianisene only: no effect. HCB + diethylstilbestrol dipropionate or chlorotrianisene: less liver HCB than with HCB only. Estrogen-induced porphyria due to stimulated HCB metabolism.

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/ Twenty years after the explosive incident in Turkey, some of the individuals were still suffering from the effects of hexachlorobenzene. ... /Effects were/: hyperpigmentation (53% of the patients), hirsutism (41%), scarring of hands and face (50%), pinched facies and rhagades (22%), fragile skin on hands and face (12.5%), large liver (9%), ascites and jaundice (9.4%), recent red urine (9.4%), weakness and parathesias (43.7%), small hands, sclerodermoid thickening, shortening of distal phalanx and painless arthritis (44%), and enlarged thyroid (38%), compared to 5% in the general Turkish population of this area.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ ... The subacute toxicity of hexachlorobenzene (HCB) /was studied/ in Charles River rats fed diets providing dosages of 0.5, 2, 8, and 32 mg of the compound in corn oil per kilogram of body weight per day. Subgroups of rats were killed at 3, 6, 9, 12, and 15 days of feeding. At 15 weeks the remaining rats were then fed a compound free diet and sacrificed after 1, 2, 4, 16, and 33 weeks. Signs of intoxication were dose related and included excessive irritability, tremors, alopecia, and nonspecific dermal changes with slight scabbing at sites displaying alopecia. Ataxia with hind leg paralysis and loss of pain response in the legs were seen in a few females at the daily 32 mg/kg dose level after 6 and 9 weeks of treatment. In males and females, tremors disappeared after 3-4 weeks of feeding; all other signs of intoxication disappeared by 9 weeks.

Non-Human Toxicity Values:

>> LD50 Rat oral 3500 mg/kg

Populations at Special Risk:

>> /Individuals who suffer from/ skin, liver, kidney, or chronic respiratory disease, will be at an increased risk if they are exposed to chlorobenzenes. /Chlorobenzenes/

12. Ecological Information

Resident Soil (mg/kg)

>> 2.10e-01

Industrial Soil (mg/kg)

>> 9.60e-01

Resident Air (ug/m3)

>> 6.10e-03

Industrial Air (ug/m3)

>> 2.70e-02

Tapwater (ug/L)

>> 9.80e-03

MCL (ug/L)

>> 1.00e+00

Risk-based SSL (mg/kg)

>> 1.20e-04

MCL-based SSL (mg/kg)

>> 1.30e-02

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

>> 1.60e+00

Inhalation Unit Risk (ug/m3)-1

>> 4.60e-04

Chronic Oral Reference Dose (mg/kg-day)

>> 1e-05

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

ICSC Environmental Data:

>> The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment. Bioaccumulation of this chemical may occur in plants and fish. This substance does enter the environment under normal use. Great care, however, should be taken to avoid any additional release, for example through inappropriate disposal.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> SEDIMENT: Hexachlorobenzene concentrations in sediment samples were as follows: Germany and Libya, rivers and lakes - 0-15 ppb(1); Mississippi R 0-900 ppb(2); Lake Superior - 13 sites all positive, 0.2 ppb average; Lake Huron - 42 sites all positive, 2 ppb average; Lake Erie - 5 sites all positive, 3 ppb average; Lake Ontario - 11 sites all positive, 97 ppb avg; Lake Ontario (Niagara Basin) - various depths, 0.5-460 ppb(3); Oslo Fjord - 2-227 ppb(4); Gulf of Mexico - 0.49 ppb(5); Portland, MA - 9 coastal samples all positive, 0.05-0.37 ppb(6). Background concentrations of hexachlorobenzene in sediments from various locations around the world between 1991 and 2001 ranged from <0.001 to 23.0 ng/g dry weight with a mean range of 0.012 to 2.13 ng/g(7).

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> Hexachlorobenzene has been detected in freshwater fish at concentrations of 0.001-0.34 ppm(2,4,8-10,13-17), marine fish at concentrations of 0.001-0.6 ppm(1,3,6,12) and in various seafoods at concentrations of 0.001-0.35 ppm(5,7,11). Hexachlorobenzene was detected in 51 samples of US fish at concentrations of 0-0.34 ppm(2). Hexachlorobenzene was detected in 150 of 2,901 fish in the US at an average concentration of 0.002 ppm and in 40 of 361 imported fish at an average concentration of 0.003 ppm(18). Fish from major watersheds near the Great Lakes had hexachlorobenzene concentrations of less than 5 ppb to 150 ppb(19). Hexachlorobenzene was detected in 77 of 315 fish caught at 107 locations in the US at an average concentration of 0.12 mg/kg (wet weight) and 1.2 mg/kg (lipid weight)(20).

Animal Concentrations:

Concentrations of this compound in animals.

>> Hexachlorobenzene concentrations in animals were as follows: Maine - gull eggs, 0-0.25 ppm(1); Germany - fox (Vulpes vulpes), 0.26 ppm average; wild boar (Sus scrofa), 0.31 ppm average; deer (Capreolus capreolus), 0.03 ppm average(2). Concentrations in samples from the USA, 16 states: 108 herons, (Ardea herodias; Butorides striatus; Florida caerulea; Bubulcus ibis; Camerodius albus; Egretta thula; Hydranassa tricolor; Nycticorax nycticorax; Nyctinassa violacea), dead or moribund: 0.05-1.3 ppm(3). Swainson's hawk (Buteo swainsoni) and American kestrel (Falco sparverius) eggs from Washington state contained hexachlorobenzene at 0.08-5.2 ppm(4).

Average Daily Intake:

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

>> Food intake 0.03-0.3 ug(1).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: chemical protection suit and particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers. Carefully collect remainder. 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 U127 and D032, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> PRECAUTIONS FOR "CARCINOGENS": There is no universal method of disposal that has been proved satisfactory for all carcinogenic compounds & specific methods of chem destruction ... published have not been tested on all kinds of carcinogen-containing waste. ... summary of avail methods & recommendations ... /given/ must be treated as guide only. /Chemical Carcinogens/

>> PRECAUTIONS FOR "CARCINOGENS": Total destruction ... by incineration may be only feasible method for disposal of contaminated laboratory waste from biological expt. However, not all incinerators are suitable for this purpose. The most efficient type ... is probably the gas-fired type, in which a first-stage combustion with a less than stoichiometric air:fuel ratio is followed by a second stage with excess air. Some ... are designed to accept ... aqueous & organic-solvent solutions, otherwise it is necessary ... to absorb soln onto suitable combustible material, such as sawdust. Alternatively, chem destruction may be used, esp when small quantities ... are to be destroyed in laboratory. /Chemical Carcinogens/

>> PRECAUTIONS FOR "CARCINOGENS": HEPA (high-efficiency particulate arrestor) filters ... can be disposed of by incineration. For spent charcoal filters, the adsorbed material can be stripped off at high temp & carcinogenic wastes generated by this treatment conducted to & burned in an incinerator. ... LIQUID WASTE: ... Disposal should be carried out by incineration at temp that ... ensure complete combustion. SOLID WASTE: Carcasses of lab animals, cage litter & misc

solid wastes ... should be disposed of by incineration at temp high enough to ensure destruction of chem carcinogens or their metabolites. /Chemical Carcinogens/

>> For more Disposal Methods (Complete) data for HEXACHLOROBENZENE (10 total), please visit the HSDB record page.

14. Transport Information

DOT

Hexachlorobenzene
6.1
UN Pack Group: III
Reportable Quantity of 10 lb or 4

IATA

Hexachlorobenzene
6.1,
UN Pack Group: III

15. Regulatory Information

Federal Drinking Water Standards:

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

>> EPA 1 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.

>> The following maximum contaminant level for synthetic organic contaminants apply to community water systems and non-transient, non-community water systems: Hexachlorobenzene, MCL 0.001 mg/L.

Regulatory Information

California Safe Cosmetics Program (CSCP) Reportable Ingredient

>> Hazard Traits - Bioaccumulation; Carcinogenicity; Developmental Toxicity; Environmental Persistence; Environmental tox; Hepatotoxicity and Digestive System Toxicity; Immunotoxicity; Nephrotoxicity and Other Toxicity to the Urinary System; Neurotoxicity; Reproductive Toxicity

>> Authoritative List - ATSDR Neurotoxicants; CA MCLs; CA TACs; Canada PBiTs; CWA 303(c); CWA 303(d); EC Annex VI CMRs - Cat. 1B; EC PBTs; IARC Carcinogens - 2B; IRIS Carcinogens - B2; NTP RoC - reasonable; Prop 65; US EPA NWMP PBTs; US EPA TRI PBTs; WA PBTs

>> Report - regardless of intended function of ingredient in the product

REACH List of substances subject to POPs Regulation (POPs)

>> Substance: Hexachlorobenzene

>> EC: 204-273-9

>> Date of inclusion in the POPs Regulation: 29-Apr-2004

>> POPs Regulation Annex: Annex I, part A; Annex III, part B; Annex IV

16. Other Information

Toxic Combustion Products:

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

>> Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Other Safety Information

Chemical Assessment

>> Evaluation - Benzene, hexachloro- (HCB)

"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."