NOVA Chemicals®

Material Safety Data Sheet

Material Name: Benzene **MSDS ID: NOVA-0011**

Section 1 - Product and Company Identification

Synonyms: Benzene, benzol
Chemical Name: Benzene
Chemical Family: Aromatic hydrocarbons
Material Use: Petrochemical industry: Solvent, raw material for petrochemicals
Chemical Formula: (C_6H_6)

NOVA Chemicals
P.O. Box 2518, Station M
Calgary, Alberta, Canada T2P 5C6

Product Information: 1-412-490-4063

EMERGENCY Telephone Numbers:
North America (Canada and US):
1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours)
1-800-424-9300 (CHEMTREC-USA) (24 hours)
1-613-996-6666 (Canutec-Canada) (24 hours)
Mexico and South America: +44 208 762 8322 (NCEC) (24 hours)

General Comments

This product has been assigned a CAS# of 71-43-2

Section 2 - Composition / Information on Ingredients

CAS #	Component	Percent by Wt.
71-43-2	Benzene	99.85
Not Available	Other hydrocarbons	0.1-1

Additional Information

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
This material is a controlled product under Canadian WHMIS regulations.
This material is regulated under DOT and TDG as a flammable liquid for transportation.

See Section 8 for applicable exposure limits. See Section 11 for applicable toxicity data.

Section 3 - Hazards Identification

HMIS Ratings: Health: 2* **Fire:** 3 **Physical Hazard:** 0 **Personal Protection:** chemical goggles, gloves, respirator, apron
*Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard*

NFPA Ratings: Health: 2 **Fire:** 3 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Emergency Overview

DANGER: TOXIC! FLAMMABLE! CANCER HAZARD! Product is a clear liquid at room temperature with a sweet, solvent-like odor. Flammable liquid and vapor can accumulate static charge - distant ignition and flashback are possible. Product will float on water and may travel to distant locations and/or spread fire; product vapor is heavier than air and may also spread long distances. This product is considered harmful by inhalation, ingestion, and dermal exposure routes. This product is irritating to the eyes and skin. Excessive inhalation may result in heartbeat irregularities and adverse central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, tremors, and in extreme conditions, coma and death. Systemic absorption effects may include long-term damage to the blood-forming system, kidney and liver damage, and/or cancer (leukemia). Ingestion may also cause adverse central nervous system effects, blood disorders, kidney and/or liver damage.

Potential Health Effects: Eyes

Contact with liquid and high concentrations of this product's vapors are irritating to the eyes.

Potential Health Effects: Skin

Product may be rapidly absorbed through the skin. Prolonged and/or repeated skin contact may cause mild to severe irritation/dermatitis and chemical blistering. Prolonged contact may also cause skin sensitization and secondary skin infections.

Potential Health Effects: Ingestion

This product may be harmful if swallowed. Ingestion of this product may result in adverse central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions coma and/or death. Ingestion may also cause kidney and liver damage and blood disorders. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential Health Effects: Inhalation

This product may be harmful if inhaled. Excessive inhalation may result in heartbeat irregularities and adverse central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions, coma and death. Additional adverse inhalation effects may also include long-term damage to blood-forming system, kidney and liver damage, and/or cancer (leukemia). Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Section 4 - First Aid Measures

First Aid: Eyes

Immediately flush eyes with lukewarm water for at least 15 minutes, while holding eyelids open. Remove contact lenses, if worn. Seek medical attention at once.

First Aid: Skin

Remove contaminated clothing and immediately wash skin with large amounts of warm water and an oil-emulsifying soap or shampoo. Seek immediate medical attention if extensive skin exposure has occurred and/or if irritation persists.

First Aid: Inhalation

Move affected individual to a well-ventilated area as soon as possible. Loosen any restrictive clothing such as a collar, tie, belt or waistband on the individual to facilitate breathing. Seek immediate medical attention if the individual is not breathing. WARNING: Contact through mouth-to-mouth resuscitation may pose a secondary exposure risk to the rescuer. Avoid mouth-to-mouth contact by using mouth shield or guard to perform artificial respiration. Immediately transport affected individual to an emergency facility.

First Aid: Ingestion

If ingestion occurs and exposed individual is unconscious, maintain an open airway by gently lifting chin and tilting head back. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek medical attention immediately.

First Aid: Notes to Physician

An Emergency Medical Response Protocol is available for this product. These are available to first responders and medical personnel. 1-800-561-6682 (24 hours, NOVA Chemicals Emergency Response)
Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures and cardiac arrhythmias in the conventional manner. Aspiration of this product during induced emesis can result in lung injury. If evacuation of stomach contents is considered necessary use the method least likely to cause aspiration, such as gastric lavage after protecting the airway. Observe hospitalized patients for delayed chemical pneumonia, acute tubular necrosis, encephalopathy and dysrhythmias. Monitor for urinary phenol within 72 hours of acute exposure.

Section 5 - Fire Fighting Measures

Flammability Class:	Flammable	**Flash Point:**	-11.1ºC (12ºF)
Upper flammability limit:	7.8% (volume/volume)	**Flash Point Method:**	Closed cup
Lower flammability limit:	1.2 % (volume/volume)	**Auto Ignition:**	498ºC (928ºF)

General Fire Hazards

Fire and container explosion hazards are serious when this product is exposed to heat or flame. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Consider need for immediate emergency isolation and evacuation for at least 300 meters (1000 feet). If tank is involved in a fire, ISOLATE for 800 meters (1/2 miles) in all directions.

Explosion Hazards

Vapors may form explosive mixture with air. Keep containers away from source of heat or fire. Containers may explode when involved in a fire. Evacuate personnel to a distance of at least one-half mile (0.8 to 1.6 km) if a fire or rail car, tank car, or major vessel rupture is possible.

Hazardous Combustion Products

Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Extinguishing Media

Dry chemical, foam, carbon dioxide, and water fog. Use of an inert foam extinguishing material may also assist in short term flammable vapor suppression. Use water to cool fire-exposed containers and to protect personnel. Water may be an ineffective extinguishing medium. Monitor water run-off for flammability, and prevent from entering waterways, drains and sewers, or other confined or underground spaces.

Fire Fighting Equipment/Instructions

Position upwind. Keep unnecessary personnel away. Set up to fight fire at a safe distance. Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products. Immediately withdraw in case of fire and tank venting or heat discoloration of a tank. Control runoff water to prevent entry into sewers, drains, underground or confined spaces and waterways.

Section 6 - Accidental Release Measures

Evacuation Procedures

Isolate area. Keep unnecessary personnel away. Ground all approved equipment used in area. Alert stand-by emergency and fire fighting personnel.

Small Spills

Eliminate ignition sources. Spill or leak area should be isolated immediately for 25 to 50 meters (80 to 160 feet) in all directions. Keep upwind and out of low areas. Stop discharge if safe to do so. Contain discharge by booming on water or diking on ground.. Spills on water will volatilize rapidly, making containment or recovery difficult. Remove liquid material with non-sparking approved pumps, skimmers or vacuum equipment. Absorb/adsorb residual materials and clean up with non-sparking tools. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.

Large Spills

Consider downwind evacuation for 300 meters (1000 feet). Isolate, contain, and attempt to recover. Absorb with DRY earth, sand or other non-combustible material. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways. An inert foam cover material may assist in short term vapor suppression.

Special Procedures

Contact local police/emergency services and appropriate emergency telephone numbers provided in Section 1. Ensure statutory and regulatory reporting requirements in the applicable jurisdiction are met.
Monitor surrounding area for build-up of flammable air concentrations. Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed. Wear appropriate protective equipment and clothing during clean-up.

Section 7 - Handling and Storage

Handling Procedures

Keep locked up or secured. Handle in fully grounded, properly designed equipment systems suitable for flammable liquids. Collect and flare vents. Keep away from heat, ignition sources and incompatible materials such as oxidizing agents and acids. No smoking or open flames permitted in storage, use, or handling areas. Dissipate static electricity during transfer by grounding and bonding containers and equipment. Take special precautions when cold cutting or breaking into lines, or when cleaning and disposing of empty containers.
Do not breathe product gas, fumes, vapor, or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Always wash hands thoroughly with soap and water after handling.

Incompatibility

Reactive with oxidizing agents, acids and halogens. May attack and degrade some types of plastics, rubbers and coatings. Vapors may form explosive mixture with air.

Storage Procedures

Storage area should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store in grounded, properly designed vessels and away from incompatible materials. Store and use away from heat, sparks, open flame, or any other ignition source. Keep absorbents for leaks and spills readily available. Store according to applicable regulations for flammable materials for storage tanks, containers, piping, buildings, rooms, cabinets, allowable quantities and minimum storage distances. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers, flammable gas detectors). Equip storage tank vents with a flame arrestor. Inspect vents during winter conditions for vapor ice build-up. Storage tanks should be above ground and diked to hold entire contents. A refrigerated room is generally recommended for warehouse storage of materials with a flash point lower than 37.8ºC (100ºF).

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Material Information

Follow all applicable exposure limits. Ensure that eyewash stations and safety showers are proximal to the workstation location. Use non-sparking, grounded ventilation systems separate from other exhaust systems.

B: Component Exposure Limits

ACGIH, AIHA, OSHA, NIOSH, Alberta, and Ontario exposure limit lists have been checked for those components with CAS registry numbers. Other exposure limits may apply. Check with authorities.

Benzene (71-43-2)

ACGIH:	0.5 ppm TWA; 2.5 ppm STEL skin - potential for cutaneous absorption
AIHA:	150 ppm ERP-2
OSHA:	1 ppm PEL; 5 ppm STEL; 0.5 ppm Action Level (Cancer hazard, Flammable - see 29 CFR 1910.1028)
NIOSH:	0.1 ppm TWA; 1 ppm STEL 500 ppm IDLH
Alberta:	1 ppm TWA; 3.2 mg/m3 TWA; 5 ppm STEL; 16 mg/m3 STEL
Ontario:	1 ppm TWAEV; 5 ppm STEV

Engineering Controls

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product. Ensure that eyewash stations and safety showers are proximal to the workstation location. Equipment selection reviews and preventative maintenance programs (including leak detection and repairs) are recommended practices to minimize potential workplace exposures

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses wear chemical goggles if splashing is possible or to prevent eye irritation from vapors.

Personal Protective Equipment: Skin/Hands/Feet

Wear chemically resistant gloves and footwear with good traction to avoid slipping. If splashing or contact with liquid material is possible, consider the need for use of an impervious overcoat. Remove contaminated clothing and clean before reuse. Fire resistant or natural fiber clothing is recommended. Synthetic clothing can generate static electricity and is not recommended where flammable vapors release may occur.

Personal Protective Equipment: Respiratory

NIOSH approved organic vapor cartridge respirators or SCBA should be used in poorly ventilated areas. Air supplied breathing apparatus must be used when airborne concentrations may exceed the limits of the air-purifying respirator used.

Personal Protective Equipment: General

Personal protective equipment (PPE) must not be considered a long-term solution to exposure control. PPE must be accompanied by employer programs to properly select, maintain, clean, fit and use equipment. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.

Section 9 - Physical & Chemical Properties

Physical state and appearance:	Liquid	**Color:**	Colorless
Odor:	Sweet, solvent-like	**Odor threshold:**	Detectable at 2-5 ppm, but not reliable as warning
pH:	Not applicable	**Vapor Pressure:**	75 mm Hg @ 20ºC (68ºF)
Vapor Density (Air=1):	2.8	**Dispersion properties:**	Is not dispersed in cold or hot water.
Boiling Point:	80ºC (176ºF)	**Melting Point:**	5.5ºC (42ºF)
Solubility (H2O):	Slightly soluble (0.1- 0.3 %), rapidly volatilizes	**Specific Gravity (Water=1):**	0.88
Ionicity (in water):	Not applicable	**Evaporation Rate (n-Butyl Acetate=1):**	Not available
Octanol/H2O Coeff.:	Kow = 2.13	**Percent Volatile:**	100%

Section 10 - Stability & Reactivity Information

Chemical Stability

This is a stable material.

Chemical Stability: Conditions to Avoid

Keep away from heat, sparks, or open flame.

Incompatibility

Reactive with oxidizing agents, acids and halogens. May attack and degrade some types of plastics, rubbers and coatings. Vapors may form explosive mixture with air.

Hazardous Polymerization

Not likely to occur.

Corrosivity

Not considered to be corrosive.

Hazardous Decomposition

Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Section 11 - Toxicological Information

A: Acute Toxicity - General Material Information

Benzene primarily poses an inhalation exposure hazard. It is absorbed rapidly and extensively following inhalation or ingestion and preferentially distributes into bone marrow and tissues (esp. fat, brain, kidney, liver). Potential adverse health effects include CNS depression, pneumonitis (following aspiration), respiratory failure, coma, and death. Benzene is a skin irritant that is rapidly absorbed through the skin; absorption is more rapid through abraded skin. Aspiration of small amounts of benzene will cause immediate damage to the lungs and death may result.

B: Acute Toxicity - LD50/LC50

Benzene (71-43-2)

Inhalation LC50 Rat: 10000 mg/kg/7H;
Oral LD50 Rat: 930 mg/kg; Oral LD50 Mouse: 4700 mg/kg;
Dermal LD50 Rabbit: >9400 µL/kg

C: Chronic Toxicity - General Material Information

Bone marrow is the main target organ of benzene. Long-term overexposure to benzene has been associated with certain types of leukemia in humans. The International Agency for Research on Cancer (IARC) and OSHA identify benzene as a human carcinogen. Chronic exposure to benzene has also been reported to cause adverse blood effects including anemia. Progressive deterioration of hematopoietic function expressed as a decrease in absolute lymphocyte count is the most sensitive indicator of benzene exposure.

Benzene may also cause fetotoxicity and teratogenicity. Chromosomal aberrations have been noted in animal tests.

D: Chronic Toxicity - Carcinogenic Effects

ACGIH, IARC, OSHA, and NTP carcinogen lists have been checked for selected similar materials or those components with CAS registry numbers.

Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen
OSHA: Present (Regulated Carcinogen); Present (Select Carcinogen)
NTP: Known Carcinogen (Select Carcinogen)
IARC: Supplement 7, 1987; Monograph 29, 1982 (Group 1 (carcinogenic to humans))

Special Remarks on Chronic Effects

Benzene may pose a cancer hazard and may cause adverse birth and reproductive effects. Bone marrow abnormalities, leukemia, multiple myelomas, fetotoxicity, teratogenicity (exencephaly, angulated ribs and dilated brain ventricles) have been linked to benzene exposure.

Section 12 - Ecological Information

Ecotoxicity

A: General Material Information

Product is largely insoluble in water, and evaporates rapidly. Product has moderate absorption into soil and sediment. It is considered toxic to fish.

B: Component Analysis - Ecotoxicity - Aquatic/Terrestrial Toxicity

Benzene (71-43-2)

96 Hr LC50 fathead minnow: 12.6 mg/L (flow-through);96 Hr LC50 rainbow trout: 5.3 mg/L (flow-through);96 Hr LC50 bluegill: 22 mg/L (Static); 48 Hr EC50 water flea: 356 mg/L (Static)

Environmental Fate

When released to soil or water, product will rapidly begin to volatilize. At 20ºC and moderate wind speeds, the evaporation rate for benzene is calculated to be over 2g per m^2 per sec). At 0ºC and moderate wind speeds, the evaporation rate is calculated to drop to below 0.1 g per m^2 per sec). And at a warmer temperature of 30ºC, the evaporation rate increases to over 3 g per m^2 per sec).

Mobility

Benzene migrates in soils and in ground waters. Airborne levels of benzene can be reduced by rain or water spray.

Persistence/Degradability

Benzene in air will photo-degrade with a calculated half-life of 13.4 days - this is accelerated in polluted atmospheres that contain nitrogen or sulfur oxides. By-products include phenol, nitrophenols, nitrobenzene, formic acid and peroxyacetyl nitrate. Benzene will biodegrade in soils and ground waters (half-life 16-28 days) under aerobic conditions. Limited degradation occurs under anaerobic conditions. Sewage treatment plants have been shown to remove 44-100%.

Bioaccumulation/Accumulation

Benzene has a reported Kow = 2.13. In fish, metabolites may be detected in fatty tissues, liver, and brain.

Ecological Summary

The high volatility and water solubility of benzene suggests that readily available benzene will partition to the atmosphere from the surface of water and soil within seven days. Estimated volatization half-life of benzene for soil was 7.2 to 38.4 days (Jury, WA et al., 1984). Benzene that does not evaporate will be highly to very highly mobile in the soil and may leach down into the ground water. Benzene may be subject to biodegradation based on reported biodegradation of 24% and 47% of the initial 20 ppm benzene in a base-rich, para-brownish soil within 1 to 10 weeks. Half-life of volatization from a model river 1m deep was 2.7 hours at 20°C (68°F). In the atmosphere, benzene will exist predominantly in the vapor phase. It will react with oxygen photochemically to produce hydroxyl radicals with a half-life of 13.4 days. Products of photo-oxidation include phenol, nitrophenols, nitrobenzene, formic acid and peroxyacetyl nitrate. Based on the reported and estimated BCF, benzene is not expected to bioconcentrate in aquatic organisms.

Section 13 - Disposal Considerations

U.S./Canadian Waste Number & Descriptions

A: General Material Information

This product is known to be a hazardous waste according to US RCRA and Canadian regulations. The use, mixing or processing of this material may alter this product. Contact federal, provincial/state and local authorities in order to generate or ship a waste material associated with this product to ensure materials are handled appropriately and meet all criteria for disposal of hazardous waste. Vent to a burning flame at an approved facility. DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED IGNITION.

B: Component Waste Numbers

Benzene (71-43-2)

RCRA: waste number U019 (Ignitable waste, Toxic waste)
0.5 mg/L regulatory level

Section 14 - Transportation Information

US DOT Information

Shipping Name: Benzene
UN# 1114 **Hazard Class:** 3 **Packing Group:** II
Required Label(s): FLAMMABLE LIQUID
Additional Info.: NOTE: The Reportable Quantity for benzene is 10 lbs. (4.54). For shipments, in a single container that exceed the RQ for benzene, the letters RQ must appear in the proper shipping name.

Canadian TDG Information

Shipping Name: Benzene
UN# 1114 **Hazard Class:** 3 **Packing Group:** II
Required Label(s): FLAMMABLE LIQUID

International Air Transport Association (IATA) Regulations

Shipping Name: Benzene
UN# 1114 **Hazard Class:** 3 **Packing Group:** II
Required Label(s): FLAMMABLE LIQUID

International Maritime Dangerous Goods (IMDG) Code

Shipping Name: Benzene
UN# 1114 **Hazard Class:** 3 **Packing Group:** II
Required Label(s): FLAMMABLE LIQUID
Additional Info.: EmS No.: F-E, S-D

Section 15 - Regulatory Information

A: INTERNATIONAL REGULATIONS

Component Analysis - International Inventory Status

Components of this product have been checked against the following Chemical Control Inventories:

Component	CAS #	US - TSCA	CANADA - DSL	EU - EINECS
Benzene	71-43-2	Yes	Yes	Yes

B: USA FEDERAL & STATE REGULATIONS

Ongoing occupational hygiene and medical surveillance programs may be required by Federal or state regulations. Check applicable regulations.

USA OSHA Hazard Communication Class

HCS CLASS: Flammable liquid IB having a flash point lower than 22.8ºC (73ºF) and having a boiling point at or above 37.8ºC (100ºF).
Highly Toxic
HUMAN CARCINOGEN.
Irritating substance.
Target organ effects.

USA Right-to-Know - Federal

This material contains one or more of the following chemicals that must be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Benzene (71-43-2)

SARA 313: 0.1 percent de minimis concentration

CERCLA: 10 lb final RQ (receives an adjustable RQ of 10 lbs based on potential carcinogenicity in August 14, 1989 final rule); 4.54 kg final RQ (receives an adjustable RQ of 10 lbs based on potential carcinogenicity in August 14, 1989 final rule)

USA Right-to-Know - State

The following components appear on one or more of the following state hazardous substances lists. Some components (including those present only in trace quantities, and therefore not listed in this document) may be included on the Right To Know lists of other U.S. states. The reader is therefore cautioned to contact his or her NOVA Chemicals representative or NOVA Chemicals' Product Integrity group for further U.S. State Right To Know information.

Component	CAS	NJ	PA
Benzene	71-43-2	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

C: CANADIAN REGULATIONS - FEDERAL AND PROVINCIAL

WHMIS Ingredient Disclosure List (IDL)

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List (IDL):

Component	CAS #	Minimum Concentration
Benzene	71-43-2	0.1 % (English Item 153, French Item 277)

WHMIS Classification

Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR), and the MSDS contains all of the information required by the CPR.

WHIMS CLASS B2: Flammable liquid with a flash point lower than 37.8ºC (100ºF).

WHMIS Class D2A: Carcinogen (Benzene)

WHMIS Class D2B: Material causing other toxic effects.

Provincial Regulations

Ongoing occupational hygiene and medical surveillance programs may be required by provincial regulations. Check applicable regulations.

Section 16 - Other Information

Label Information

DANGERS: FLAMMABLE! TOXIC! CANCER HAZARD! Product is a clear liquid at room temperature with a sweet, solvent-like odor. Flammable liquid and vapor can accumulate static charge - distant ignition and flashback are possible. Product will float on water and may travel to distant locations and/or spread fire; product vapor is heavier than air and may also spread long distances. . This product is considered harmful by inhalation, ingestion, and dermal exposure routes. This product is irritating to the eyes and skin. Excessive inhalation may result in heartbeat irregularities and adverse central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, tremors, and in extreme conditions, coma and death. Systemic absorption effects may include long-term damage to the blood-forming system, kidney and liver damage, and/or cancer (leukemia). Ingestion may also cause adverse central nervous system effects, blood disorders, and kidney and/or liver damage.

FIRST AID:

SKIN: Remove contaminated clothing and immediately wash skin with large amounts of warm water and an oil-emulsifying soap or shampoo. Seek immediate medical attention if extensive skin exposure has occurred and/or if irritation persists.

EYES: Immediately flush eyes with lukewarm water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

INHALATION: Move affected individual to a well-ventilated area as soon as possible. Loosen any restrictive clothing such as a collar, tie, belt or waistband on the individual to facilitate breathing. Seek immediate medical attention if the individual is not breathing. WARNING: Contact through mouth-to-mouth resuscitation may pose a secondary exposure risk to the rescuer. Avoid mouth-to-mouth contact by using mouth shield or guard to perform artificial respiration. Immediately transport affected individual to an emergency facility.
INGESTION:
If ingestion occurs and exposed individual is unconscious, maintain an open airway by gently lifting chin and tilting head back. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek medical attention immediately.

IN CASE OF A LARGE SPILL: Consider downwind evacuation for 300 meters (1000 feet). Isolate, contain, and attempt to recover. Absorb with DRY earth, sand or other non-combustible material. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways. An inert foam cover material may assist in short term vapor suppression.

References

Available on request.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; IARC = International Agency for Research on Cancer; IDL = Ingredient Disclosure List; Kow = Octanol/water partition coefficient; LEL = Lower Explosive Limit; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; RCRA = Resource Conservation and Recovery Act; SARA = Superfund Amendments and Reauthorization Act; TDG = Transportation of Dangerous Goods; TSCA = Toxic Substances Control Act.

MSDS Prepared by: NOVA Chemicals

MSDS Information Phone Number: 1-412-490-4063

Other Information

Notice to Reader

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This is the end of MSDS # NOVA-0011