GARDENA, CA
NEW BRUNSWICK, NJ

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment
	Health Hazard 3 Fire Hazard 1 Reactivity 0	 See Section 15.

Section 1. Chemical Product and Company Identification

Common Name/ Trade Name	**Mechlorethamine Hydrochloride**
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248
Commercial Name(s)	Not available.
Synonym	Bis(2-Chloroethyl)methylamine hydrochloride; 1,5-Dichloro-3-methyl-3-azapentane hydrochloride; 2,2'-Dichloro-N-methyldiethylamine hydrochloride; beta,beta'-Dichlorodiethyl-N-methylamine hydrochloride; Chlormethine hydrochloride; Di(2-chloroethyl)methylamine hydrochloride; Ethanamine, 2-chloro-N-(2-chloroethyl)-methyl-, hydrochloride; MBA hydrochloride; Methyldi(2-chloroethyl)amine hydrochloride; Methyldi(beta-chloroethyl)amine hyddrochloride; Mustargen hydrochloride; Mustine hydrochloride; N,N-Bis(2-chloroethyl)methylamine hydrochloride; N-Methyl-2,2'-dichlorodiethylamine hydrochloride; N-Methyl-bis-beta-chlorethylamine hydrochloride; N-Methyl-di-2-chloroethylamine hydrochloride; N-Methylbis(2-chloroethyl)amine hydrochloride; Nitrogen mustard hydrochloride; Nitrogranulogen; Pliva; Antimit; Azotoyperite; Caryolysine; Chloramin; Chlormethine hydrochloride; Dichloren; Dimitan; Embichin; Erasol; Kloramin
Chemical Name	Diethylamine, 2,2'-dichloro-N-methyl, hydrochloride
Chemical Family	Not available.
Chemical Formula	C5-H11-Cl2-N.HCl
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248

Catalog Number(s).	M3978, YY721
CAS#	55-86-7
RTECS	IA2100000
TSCA	TSCA 8(b) inventory: No products were found.
CI#	Not available.

IN CASE OF EMERGENCY
CHEMTREC (24hr) 800-424-9300

CALL (310) 516-8000

Section 2.Composition and Information on Ingredients

		Exposure Limits			
Name	**CAS #**	**TWA (mg/m^3)**	**STEL (mg/m^3)**	**CEIL (mg/m^3)**	**% by Weight**
1) Mechlorethamine Hydrochloride	55-86-7				100

Toxicological Data on Ingredients

Mechlorethamine Hydrochloride:
ORAL (LD50): Acute: 10 mg/kg [Rat]. 20 mg/kg [Mouse]. 12.5 mg/kg [Rabbit].

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Section 3. Hazards Identification

Potential Acute Health Effects	Very hazardous in case of ingestion. Hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of inhalation (lung sensitizer). Corrosive to eyes and skin. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death.
Potential Chronic Health Effects	**CARCINOGENIC EFFECTS**: Classified 2A (Probable for human.) by IARC, 2 (Some evidence, reasonably anticipated to be a human carcinogen.) by NTP. **MUTAGENIC EFFECTS**: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. **TERATOGENIC EFFECTS**: Not available. **DEVELOPMENTAL TOXICITY**: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. The substance may be toxic to blood, the reproductive system, peripheral nervous system, bone marrow, central nervous system (CNS), ears. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Serious Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	May be combustible at high temperature.
Auto-Ignition Temperature	Not available.
Flash Points	Not available.
Flammable Limits	Not available.
Products of Combustion	These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), halogenated compounds.
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of heat.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

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Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Remarks on Fire Hazards	As with most organic solids, fire is possible at elevated temperatures
Special Remarks on Explosion Hazards	Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Poisonous solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

Section 7. Handling and Storage

Precautions	Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Synthetic apron. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Crystalline powder.)	**Odor**	Not available.
Molecular Weight	192.52 g/mole	**Taste**	Not available.
pH (1% soln/water)	Not available.	**Color**	White.
Boiling Point	Not available.		
Melting Point	108°C (226.4°F) - 111 C.		
Critical Temperature	Not available.		
Specific Gravity	Not available.		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	The product is more soluble in water; log(oil/water) = -1.2		

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Ionicity (in Water)	Not available.
Dispersion Properties	See solubility in water.
Solubility	Soluble in cold water. Soluble in alcohol (ethanol); Solubility in Water: 1 g/100 ml

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Excess heat, incompatible materials, moisture.
Incompatibility with various substances	Reactive with oxidizing agents.
Corrosivity	Not available.
Special Remarks on Reactivity	Solutions of mechlorethamine hydrochloride are unstable and decompose on standing. Incompatible with methohexital sodium. Hygroscopic; keep container tightly closed.
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 10 mg/kg [Rat].
Chronic Effects on Humans	**CARCINOGENIC EFFECTS**: Classified 2A (Probable for human.) by IARC, 2 (Some evidence, reasonably anticipated to be a human carcinogen) by NTP. **MUTAGENIC EFFECTS**: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. **DEVELOPMENTAL TOXICITY**: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. May cause damage to the following organs: blood, the reproductive system, peripheral nervous system, bone marrow, central nervous system (CNS), ears.
Other Toxic Effects on Humans	Very hazardous in case of ingestion. Hazardous in case of skin contact (corrosive, irritant, sensitizer), of eye contact (corrosive), of inhalation (lung sensitizer, lung corrosive).
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	May cause adverse reproductive effects and birth defects (teratogenic). May cause cancer. May affect genetic material (mutagenic)
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: Direct contact can severely irritate the skin with itching, severe blistering, and possible burns. It may also cause hyperpigmentation. Eyes: It can severely irritate the eyes and cause injury to deeper ocular structures, particularly the iris and lens. Inhalation: Can irritate the nose and throat causing coughing and wheezing. Higher exposure can cause headache, nausea, vomiting, dizziness. Ingestion: May be fatal if swallowed. It can cause nausea, vomiting, gastrointestinal bleeding, anorexia, jaundice, myelosuppression (bone marrow supression). It may affect the blood (reduction in white blood cell count - leukopenia, thrombocytopenia, granulocytopenia), behavior/central nervous system/peripheral nervous system (somnolence, weakness, drowsiness, headache, vertigo, lightheadedness, convulsions, spasms, progressive muscle paralysis, paresthesia, cerebral degeneration, coma, death). Chronic Potential Health Effects: Ingestion: Repeated exposure can affect the bone marrow function and reduce the amount of red blood cells (anemia), and blood (similar to that if acute ingestion), and cause hair loss. It may also affect the central and

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peripheral nervous system with symptoms similar to that of acute ingestion. It is a probable carcinogen. There is some evidence that it causes leukemia in humans, and it has been shown to cause tumors of the respiratory system in animals. It has also been shown to be ototoxic, producing hearing loss and tinnitus in cancer patients. Hypersensitivity may develop and cause allergic reaction.
Skin: It has been shown to cause skin cancer in animals.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are as toxic as the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification	CLASS 6.1: Poisonous material.
Identification	: Toxic Solid, organic, n.o.s.(mechlorethamine hydrochloride) UNNA: 2811 PG: II
Special Provisions for Transport	Not available.
DOT (Pictograms)	

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations	California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mechlorethamine Hydrochloride California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Mechlorethamine Hydrochloride Illinois toxic substances disclosure to employee act: Mechlorethamine Hydrochloride Pennsylvania RTK: Mechlorethamine Hydrochloride Minnesota: Mechlorethamine Hydrochloride Massachusetts RTK: Mechlorethamine Hydrochloride California Director's List of Hazardous Substances: Mechlorethamine Hydrochloride
California Proposition 65 Warnings	California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Mechlorethamine Hydrochloride California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.
Other Regulations	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.
Other Classifications	**WHMIS (Canada)** CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

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	DSCL (EEC)	R28- Very toxic if swallowed. R34- Causes burns. R42/43- May cause sensitization by inhalation and skin contact. R45- May cause cancer. R46- May cause heritable genetic damage.	S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.)

Health Hazard	3
Fire Hazard	1
Reactivity	0
Personal Protection	

National Fire Protection Association (U.S.A.)

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.

Synthetic apron.

Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

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Section 16. Other Information

MSDS Code	**M5698**
References	Not available.
Other Special Considerations	Not available.

Validated by Sonia Owen on 8/11/2006.

Verified by Sonia Owen.

Printed 9/12/2006.

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.