



SDS # 540

300 Northfield Road
Bedford, OH 44146
Telephone: (440) 232-3320
-or- (800) 562-4797

MATERIAL SAFETY DATA SHEET

Section I - IDENTITY

Common/Trade Name: Methotrexate Injection, USP (25 mg/mL; 2mL, 4mL, 8mL and 10mL)

Chemical Name: N-[4-[(2,4-diamino-6-pteridiny)methyl]methylamino]benzoyl]-L-glutamic acid

Synonyms: Methotrexate, MTX sodium, L-Glutamic Acid

Manufacturer's Name: BEN VENUE LABORATORIES, INC.

Address: 300 NORTHFIELD ROAD
BEDFORD, OH 44146

Emergency Telephone Number: Chemtrec: 1(800)424-9300

Telephone Number for Info.: (440)232-3320 or (800)562-4797

Medical Emergency: Professional Services: 1(800)521-5169

Date Prepared: May 29, 1996

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Section II - HAZARDOUS INGREDIENTS/COMPOSITION INFORMATION

<u>Component</u>	<u>%</u>	<u>CAS#</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
					<u>Recommended</u>
Methotrexate	2.5	59-05-2	NONE	NONE	0.5 mcg/m ³
Sodium Chloride	0.49	7647-14-5	NONE	NONE	NONE
Water for Injection	97.01	7732-18-5	NONE	NONE	NONE

Sodium Hydroxide and Hydrochloric Acid for pH adjustment of 8.5

Methotrexate is a sterile injectable liquid drug provided in a vial.

Section III - HEALTH HAZARD DATA

Routes of Entry: Exposure to this product could occur by accidental ingestion, inhalation, or skin contact.

Health Hazard (Acute & Chronic): Methotrexate is a cytotoxic anticancer drug used to treat a variety of cancers. It can affect the digestive and central nervous systems. Chronic exposures cause changes in the blood forming system, damage to bone marrow tissues, and possible liver damage. Allergic reaction may also result.

Carcinogenicity: NTP? NO IARC Monographs? Group III (Inconclusive evidence)
OSHA Regulated? NO

Methotrexate may cause cancer and may be mutagenic, teratogenic, and fetotoxic.

Signs & Symptoms of Exposure: Nausea, abdominal distress, chills, fever, fatigue, dizziness, mood disorders, irritation of eyes, skin, respiratory system, and possible allergic reaction may occur. **SDS # 540**

Medical Conditions Generally Aggravated by Exposure: Blood, digestive system, and kidney/liver disorders may be aggravated upon exposure.

BVL Hazard Category: 4

Section IV - FIRST AID MEASURES

Eye Exposure: Flush eyes with large volumes of water for 15 minutes.

Skin Exposure: Wash skin with cool, soapy water.

Ingestion: If ingestion occurs, flush mouth with water and seek medical attention.

Inhalation: If difficulty breathing, administer oxygen. Seek attention of a physician immediately. If necessary, provide artificial respiration.

NOTE to physician: Calcium Leucovorin is a potent agent for neutralizing the immediate toxic effects of Methotrexate on the blood forming system.

Section V - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): NONE **Flammable Limits:** LEL: NA UEL: NA

Extinguishing Media: Use water or an ABC multi-purpose extinguisher

Special Fire Fighting Procedures: As with all fires, evacuate personnel to a safe area. Fire fighters should wear a self-contained breathing apparatus (SCBA) to avoid inhalation of smoke. Product is aqueous-based and is not expected to present a fire hazard concern.

Unusual Fire/Explosion Hazards: NONE

Section VI - ACCIDENTAL RELEASE INFORMATION

Release to Land: Absorb Methotrexate solution with absorbent materials and dispose of according to federal, state, and local guidelines.

Release to Air: If aerosolized, reduce exposures by ventilating the area; clean up spill immediately to prevent evaporation.

Release to Water: Refer to local water authority. Drain disposal is not recommended; however, refer to local, state, and federal disposal guidelines.

Section VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled: See Section VI above; wear latex or nitrile gloves, protective clothing, and safety glasses when cleaning spills. A half-mask air purifying respirator with HEPA cartridges (P100) See Section VI above; wear latex or nitrile gloves and safety glasses. For larger spills, additional protective clothing and respirator protection may be needed such as chemical protective coveralls, boots, double gloves (neoprene), and self contained breathing apparatus (SCBA).

Waste Disposal Method: Incinerate in an approved/permitted incinerator. Refer to federal, state, and local guidelines.

Precautions to be taken in handling and storing: Store at 15-30°C; protect from light.

Other Precautions: Follow OSHA guidelines for safe handling of cytotoxic products (see Section XVI).

Section VIII - CONTROL MEASURES AND PERSONAL PROTECTIVE EQUIPMENT

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Respiratory Protection: Under normal use, a respirator is not required. If aerosols are generated, a half-mask respirator with HEPA cartridges may be used. Personnel wearing respirators should be fit tested and approved for respirator use under the OSHA Respiratory Protection Standard 29 CFR 1910.134.

Ventilation: Use in a Class II Type B biological safety cabinet or in a well-ventilated area.

Protective Gloves: Nitrile or latex

Eye Protection: Safety glasses or goggles

Other Protective Clothing or Equipment: Lab coat

Work/Hygienic Practices: Wash hands following use. No eating, drinking, or smoking while handling this product.

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Physical State: Liquid

Specific Gravity: Approximate = 1

Appearance and Odor: Yellowish-orange, clear liquid with no odor

Melting Point: Not applicable

Boiling Point: >100°C

Evaporation Rate: Approximate to water

Vapor Pressure: Not applicable

Solubility in Water: insoluble

Vapor Density: Not applicable

pH: 8.5

Section X - STABILITY AND REACTIVITY DATA

Stability: Stable

Incompatibility (Materials to Avoid): Oxidizers and water reactive materials

Hazardous Decomposition or Byproducts: Products of decomposition may include hazardous byproducts such as nitrogen oxides, carbon monoxide, and carbon dioxide.

Hazardous Polymerization: Will not occur

Conditions to Avoid: Store away from strong oxidizers or water reactive materials

Section XI - TOXICOLOGICAL INFORMATION

Toxicity data is for Methotrexate (active drug substance): RTECS # MA1225000

LD₅₀ rat, oral = 135 mg/kg

LD₅₀ mouse, oral = 146 mg/kg

LD₅₀ rat, intraperitoneal = 6 mg/kg

LD₅₀ rat, intravenous = 14 mg/kg

LD₅₀ mouse, intraperitoneal = 50 mg/kg

LD₅₀ mouse, unreported = 69 mg/kg

Additional reproductive health data is available from the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS).

Section XII - ENVIRONMENTAL IMPACT INFORMATION

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Information is currently not available on the environmental impact of Methotrexate. Handle in a manner to prevent spills or releases to the environment.

Section XIII - DISPOSAL INFORMATION

Dispose of by incineration at an approved/permitted facility according to local, state, and federal regulations.

Section XIV - TRANSPORTATION INFORMATION

Methotrexate is not classified as a DOT hazardous material.
Methotrexate is not a Marine Pollutant.

Section XV - REGULATORY INFORMATION

SARA 313 listed?: NO

CERCLA listed?: NO

RCRA listed?: NO

Listed on California's Proposition 65 List as Group D

Section XVI - OTHER DATA

1. Use of this product should be through or under the direction of a physician.
This MSDS does not address the therapeutic use of this material.
2. Hospital personnel preparing or administering parenteral antineoplastic agents should wear disposable latex gloves, safety glasses, a closed-front gown with cuffs, and respiratory protection. Preparation of all antineoplastic agents should be done in a Class II laminar flow hood or biological safety cabinet with exhaust air discharged external to the room environment. All needles, syringes, vials, and other equipment or disposable clothing that have contacted this agent should be segregated for incineration.
3. Persons administering this drug to patients must be careful to avoid needle sticks to syringes and other sharps used in the administration. All needle sticks must be reported to your company management.
4. BVL Hazard Category Definitions (internal hazard ranking used by Ben Venue Laboratories):
1 = Low Toxicity
2 = Moderate Toxicity
3 = Potent or Toxic
4 = Highly Potent or Toxic
5 = Extremely Potent or Toxic
5. OEL=Occupational Exposure Limit. An internal limit set by Ben Venue Laboratories for the recommended limit of employee exposure to airborne dusts or aerosols that should not be exceeded over an eight-hour time-weighted average.

6. Methotrexate is considered a Hazardous Drug as described in the NIOSH Alert: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings. Employees who prepare or administer hazardous drugs or who work in areas where these drugs are used should follow specific handling guidelines in order to prevent exposure to these agents in the air or on work surfaces, clothing, or equipment.

7. **The Following Guidance Information is excerpted from the NIOSH Alert:**

Elements of a Hazardous Drug Handling Program include:

- Establishment and implementation of written policies and protocols to ensure the safe handling of oncolytic and/or potent drugs, including receipt of product.
- Training and education of employees on the recognition, evaluation and control of Hazardous Drugs
- Effective Planning and design of the workplace
- Use of best practice control measures and specialized equipment such as ventilated cabinets or isolators designed for worker protection
- Wearing recommended personal protective equipment
- An integrated health surveillance program that: includes the assessment and counseling of prospective employees before they commence any work involving oncolytic and/or potent drugs and related waste

8. **Published guidance on the handling and transport of cytotoxic drugs:**

NIOSH Alert – Preventing occupational exposures to antineoplastic and other hazardous drugs in health care settings

<http://www.cdc.gov/niosh/docs/2004-165/>

National Study Commission on Cytotoxic Exposure: Recommendation for handling Cytotoxic Agents:

<http://www.nih.gov/od/ors/ds/pubs/cyto/index.htm>

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