



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

## MATERIAL SAFETY DATA SHEET

### Section I - IDENTITY

**Common/Trade Name:** Thiotepa for Injection, 15mg/vial  
**Chemical Names:** Triethylenethiophosphoramidate; Tris(1-aziridinyl)phosphine sulfate  
 N,N',N''- Triethylenethiophosphoramidate; 1,1'1''-phosphinothioylidynetrisaziridine  
**Synonyms:** Thioplex®, TESP, TSPA, CL8206, NCI-C01649, NSC-6396  
**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.:** (800) 562-4797 or (440) 232-3320  
**Medical Emergency:** Professional Services 1(800) 521-5169  
**Date Prepared:** April 5, 2001  
**Date Revised:** December 28, 2001  
**Date Revised:** April 14, 2005  
**Date Revised:** July 20, 2007

### 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 Recommended</u>
Thiotepa	100	52-24-4	NONE	NONE	0.2 ug/m <sup>3</sup> (BVL OEL)

Thiotepa is a sterile parenteral injectable drug presented as a powder cake. It must be reconstituted with Sterile Water for Injection prior to administration.

### Section III - HEALTH HAZARD DATA

**Routes of Entry:** Thiotepa may be absorbed via inhalation, ingestion or skin or eye contact.  
**Health Hazard (Acute & Chronic):** Thiotepa is a genotoxic drug used in treating a variety of cancers. It may cause irritation to eyes, skin and respiratory tract. Product target organs are bone marrow, kidneys, liver, heart, lungs, spleen, blood systems, eyes, gastrointestinal system and reproductive systems. May cause an allergic reaction. Chronic exposure may cause skin depigmentation and allergic reactions as well as acute effects listed above. May also cause cancer (leukemia). May cause birth defects in developing fetus.

**Carcinogenicity:** NTP? Yes-Group B

**IARC Monographs?** Yes-Group 1 Sufficient  
Human and Animal Evidence

**OSHA Regulated?** No

**Signs & Symptoms of Exposure:** May cause dizziness, hives, loss of appetite, nausea, vomiting, hair loss, missed menstrual cycle, fever, chills, cough, sore throat, headache, difficult urination, unusual bruising or bleeding.

**Medical Conditions Generally Aggravated by Exposure:** Persons allergic to Thiotepa, recent chicken pox exposures, herpes zoster, gout, kidney stones and impaired liver and kidney function.

**BVL Hazard Category:** 4

#### Section IV - FIRST AID MEASURES

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

**Skin Exposure:** Wash skin thoroughly with cool, soapy water.

**Ingestion:** If ingestion occurs, induce vomiting immediately and seek medical attention. Never induce vomiting on an unconscious person.

**Inhalation:** If difficulty breathing, administer oxygen. Seek the attention of a physician immediately. If excess exposure occurs, monitor blood and white blood cell count to assess the effects to the blood forming systems. Transfusions of white blood cells or platelets or leukocytes have proven beneficial.

#### Section V - FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method Used):** Not applicable

**Flammable Limits:** Not applicable    **LEL:** NA    **UEL:** NA

**Extinguishing Media:** Use water or multi-purpose ABC extinguisher.

**Special Fire Fighting Procedures:** As with all fires, evacuate personnel to a safe area. Firefighters must wear self-contained breathing apparatus to avoid inhalation of smoke. Product is not expected to present a fire hazard concern.

**Unusual Fire/Explosion Hazards:** None

#### Section VI - ACCIDENTAL RELEASE INFORMATION

**Release to land:** Wet Thiotepa with water to prevent dusting and absorb with absorbents. Prevent contact with sewers and waterways. Thiotepa is degraded when a weak acid or ammonia solution is added. Follow by cleaning with soap and water.

**Release to air:** If dust is generated, reduce exposures by ventilating and prevent further generation of dust. Wear respiratory protection.

**Release to water:** Refer to local water authority; drain disposal is not recommended. Refer to federal, state and local 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 all necessary protective clothing, safety glasses and air-purifying respirator with HEPA filters (P100).

Large spills require the use of self-contained breathing apparatus (SCBA).

**Waste Disposal Method:** Disposal via incineration is recommended. Follow federal, state and local regulations.

**Precautions to be taken in handling and storing:** Store at temperatures between 2-8°C (36-46°F). Handle and store away from acidic substances.

**Other Precautions:** Follow OSHA guidelines on the safe handling of cytotoxic/genotoxic products (see Section XVI).

## Section VIII - CONTROL MEASURES AND PERSONAL PROTECTIVE EQUIPMENT

**Respiratory Protection:** Under normal use in a biological safety hood, respirators may not be necessary. If dusts are generated and exposure levels exceeded, an air purifying respirator with HEPA filters (P100) must be worn. For large spills, SCBA may be required. Personnel wearing respirators should be fit tested and approved for respirator use under the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

**Ventilation:** Use with adequate ventilation such as in a class II Type B biological safety hood.

**Protective Gloves:** Nitrile or latex (double layers)

**Eye Protection:** Safety glasses or goggles

**Other Protective Clothing or Equipment:** Lab coat

**Work/Hygienic Practices:** No eating, drinking or smoking while handling this product. Use good personal hygiene.

## Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

**Physical State:** Solid

**Appearance and Odor:** White powder with no odor

**Boiling Point:** Not applicable

**Vapor Pressure:** Not applicable

**Vapor Density:** Not applicable

Thiotepa is freely soluble in ethanol, soluble in ether, benzene and chloroform.

**Specific Gravity:** Not applicable

**Melting Point:** 52-57°C

**Evaporation Rate:** Not applicable

**Solubility in Water:** Thiotepa is soluble in  
Water at 19g/100ml at 25°C

**pH:** 5.8-7.5 in a 0.02% solution

## Section X - STABILITY AND REACTIVITY DATA

**Stability:** Stable up to 40°C

**Incompatibility (Materials to Avoid):** Acids and strong oxidizers; storage in heat.

**Hazardous Decomposition or Byproducts:** Decomposition products of Thiotepa may include carbon monoxide, carbon dioxide, nitrogen oxides and hydrogen cyanide. Phosphorous and sulfur oxides may also be generated.

**Hazardous Polymerization:** Will not occur

**Conditions to Avoid:** Avoid storage near acidic substances.

## Section XI - TOXICOLOGICAL INFORMATION

See RTECS (R) database for a complete list of toxicity data for Thiotepa: RTECS # SZ2975000

LD <sub>50</sub> oral, mouse = 38 mg/kg	LD <sub>50</sub> subcutaneous, mouse = 16.5 mg/kg
LD <sub>50</sub> oral, rat = 23 mg/kg	LD <sub>50</sub> intravenous, mouse = 14.5 mg/kg
LD <sub>50</sub> intraperitoneal, rat = 8 mg/kg	LD <sub>50</sub> intramuscular, mouse = 11.5 mg/kg
LD <sub>50</sub> subcutaneous, rat = 7.8 mg/kg	LD <sub>50</sub> intravenous, rabbit = 5.5 mg/kg
LD <sub>50</sub> intravenous, rat = 9.4 mg/kg	LD <sub>50</sub> oral, quail = 237 mg/kg
LD <sub>50</sub> intraarterial, rat = 8.75 mg/kg	LD <sub>50</sub> oral, wild bird = 5620 ug/kg
LD <sub>50</sub> intraperitoneal, mouse = 11 mg/kg	TD <sub>LO</sub> parenteral, man = 631 ug/kg
LD <sub>LO</sub> intravenous, dog = 760 ug/kg	LD <sub>LO</sub> intravenous, monkey = 1.5 mg/kg

Thiotepa causes cancer in lab mice and rats upon injection.

Thiotepa is reported to be mutagenic in mammalian cells and brospheilia.

Thiotepa has significant embryotoxic and teratogenic properties.

Additional reproductive health and toxicity 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

Information is not currently available on the environmental impact of Thiotepa. Handle in a manner that prevents spills or released to the environment.

## Section XIII - DISPOSAL INFORMATION

Dispose of via incineration according to federal, state and local guidelines.

## Section XIV - TRANSPORTATION INFORMATION

This material is a DOT hazardous material according to 49 CFR 172.101

Proper Shipping Name: Medicine, solid, toxic, n.o.s., (Thiotepa)

Hazard Class and Description: 6.1 (Poisonous solid)

UN I.D. Number: NA 3249

Packing Group: II

DOT Labels required: Refer to CFR 173.4 (Small Quantity Exceptions)

Emergency Response Guide No.: 151

Thiotepa is not a Marine Pollutant.

## Section XV - REGULATORY INFORMATION

SARA 313 listed?: NO

CERCLA listed?: NO

RCRA listed?: NO

Massachusetts Hazardous Substance codes: 1,3,7,9\* E\*C\*

Pennsylvania Hazardous Substance code: ES

Minnesota Hazardous Substance codes: RT Carcinogen: Yes

California Proposition 65 code: C

Listed as a toxic substance by the state of Florida

## 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. 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.
3. 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
4. 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.
5. Thiotepa 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.
6. **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
7. **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/>

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