# Material Safety Data Sheet

## Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>Goggles, Face Shield, Rubber Gloves</td>
</tr>
</tbody>
</table>

### Common Name/Trade Name

Cyclophosphamide, Monohydrate

### Manufacturer

SPECTRUM LABORATORY PRODUCTS INC.

14422 S. SAN PEDRO STREET

GARDENA, CA 90248

### Synonym

- Cyclophosphamide hydrate; Endoxan monohydrate; (Bis[chloro-2-ethyl]amino)-2-tetrahydro-3,4,5,6-oxazaphosphorine-1,3-monohydrate;
- 1-Bis(2-chloroethyl)amino-1-oxo-2-aza-5-oxaphosphoridine monohydrate;
- 2-(Bis(2-chloroethyl)amino)-1-oxa-3-aza-2-phosphycyclohexane 2-oxide monohydrate;
- 2-(Di(2-chloroethyl)amino)-1-oxa-3-aza-2-phosphycyclohexane-2-oxide monohydrate; Bis[2-chloroethyl]phosphoramido cyclic propanolamide ester monohydrate; Cyclic N',O-propylene ester of N,N-bis(2-chloroethyl)phosphorodiamidic acid monohydrate; N,N-Bis(2-chloroethyl)tetrahydro-2H-1,3,2-oxazaphosphorin-2-amine 2-oxide monohydrate; N,N-Bis(beta-chloroethyl)-N',O-propylene phosphoric acid ester amide monohydrate; N,N-Bis(beta-chloroethyl)-N,O-trimethylene phosphoric acid ester diamide monohydrate; N,N-Di(2-chloroethyl)amino-N,O-propylene phosphoric acid ester diamide monohydrate

### Chemical Name

2H-1,3,2-Oxazaphosphorine, tetrahydro-2-(bis[2-chloroethyl]amino)-2-oxide, monohydrate

### Chemical Family

Not available.

### Chemical Formula

C₇H₁₅Cl₂N₂O₂P·H₂O

### Catalog Number(s)

C1244, C3140

### CAS#

6055-19-2

### RTECS

RP6157750

### TSCA

TSCA 8(b) inventory: No products were found.

### CI#

Not available.

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IN CASE OF EMERGENCY

CHEMTREC (24hr) 800-424-9300

CALL (310) 516-8000

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Continued on Next Page
### Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Cyclophosphamide, Monohydrate</td>
<td>6055-19-2</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

### Toxicological Data on Ingredients

Cyclophosphamide, Monohydrate:

**ORAL (LD₅₀):**
- Acute: 94 mg/kg [Rat].
- 350 mg/kg [Mouse].
- 44 mg/kg [Dog].

### Section 3. Hazards Identification

#### Potential Acute Health Effects
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of inhalation. Severe over-exposure can result in death.

#### Potential Chronic Health Effects
- CARCINOGENIC EFFECTS: Not available.
- MUTAGENIC EFFECTS: Not available.
- TERATOGENIC EFFECTS: Not available.
- DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to bladder, bone marrow. Repeated or prolonged exposure to the substance can produce target organs 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 if irritation occurs.

#### Skin Contact
Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

#### Serious Skin Contact
Not available.

#### Inhalation
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### 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. Seek 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, phosphates.

#### Fire Hazards in Presence of Various Substances
Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.

#### Explosion Hazards in Presence of Various Substances
Slightly explosive in presence of open flames and sparks. Non-explosive in presence of shocks.

*Continued on Next Page*
**Cyclophosphamide, Monohydrate**

<table>
<thead>
<tr>
<th>Fire Fighting Media and Instructions</th>
<th>SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Remarks on Fire Hazards</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Explosion Hazards</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**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 away from heat. Keep away from sources of ignition. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**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**
Safety glasses. Lab coat. 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**

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid.</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>279.1 g/mole</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&gt;110°C(230°F) @ 760 mm Hg</td>
</tr>
<tr>
<td>Melting Point</td>
<td>49°C (120.2°F) - 53°C</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

*Continued on Next Page*
**Cyclophosphamide, Monohydrate**

**Section 10. Stability and Reactivity Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water.</td>
</tr>
<tr>
<td>Solubility in water:</td>
<td>40 g/l</td>
</tr>
<tr>
<td>Stability</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Excessive heat, dust generation, incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with oxidizing agents, acids, alkalis.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Sensitive to light.</td>
</tr>
<tr>
<td>Special Remarks on Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

**Section 11. Toxicological Information**

<table>
<thead>
<tr>
<th>Route of Entry</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of Entry</td>
<td>Inhalation. Ingestion.</td>
</tr>
<tr>
<td>Toxicity to Animals</td>
<td>Acute oral toxicity (LD50): 44 mg/kg [Dog].</td>
</tr>
<tr>
<td>Chronic Effects on Humans</td>
<td>May cause damage to the following organs: bladder, bone marrow.</td>
</tr>
<tr>
<td>Other Toxic Effects on Humans</td>
<td>Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.</td>
</tr>
<tr>
<td>Special Remarks on Toxicity to Animals</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Chronic Effects on Humans</td>
<td>May cause adverse reproductive effects and birth defects (teratogenic). May cause cancer. May affect genetic material (mutagenic)</td>
</tr>
<tr>
<td>Special Remarks on other Toxic Effects on Humans</td>
<td>Acute Potential Health Effects: Skin: May cause skin irritation. Eyes: May cause eye irritation. Inhalation: It may cause respiratory tract irritation. Ingestion: May be harmful if swallowed. It may cause nausea, vomiting, stomatitis, hemorrhagic colitis, diarrhea. Chills, fever, and sore throat may also occur and indicate leukopenia and/or infection. Unusual sweating and flushing of the face, swollen lips may occur. It may affect the cardiovascular system (tachycardia, cardiac tamponade, cardiotoxicity.) Cardiotoxicity is a less frequent side effect. Tachycardia associated with fever or chills and shortness of breath may be a sign of cardiac toxicity including acute myopericarditis. It may also affect metabolism (acidosis), blood (aplastic anemia, hemorrhage, leukopenia, thrombocytopenia, myelosuppression), skin (apolecia, nail disorder, skin discoloration), endocrine system (hyperglycemia, antidiuretic hormone disorder), the urinary system (cystitis, renal failure, hyperuricemia, hematuria, dysuria), respiratory system (shortness of breath or dyspnea, pneumonitis, interstitial pulmonary fibrosis. It may also be neurotoxic and affect behavior/central nervous system (ataxia, dizziness, agitation, changes in mental status, seizures, cerebellar dysfunction, coma, headache, polyneuropathy, fatigue, confusion). It may affect the liver and cause hepatitis. It may also cause allergic reaction (anaphylaxis). Chronic Potential Health Effects: Ingestion: Prolonged or repeated ingestion may have similar effects that of acute ingestion.</td>
</tr>
</tbody>
</table>
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.(Cyclophosphamide)  UNNA: 2811  PG: III

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: Cyclophosphamide, Monohydrate
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Cyclophosphamide, Monohydrate
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Cyclophosphamide, Monohydrate
California prop. 65 (no significant risk level): Cyclophosphamide, Monohydrate
California prop. 65 (acceptable daily intake level): Cyclophosphamide, Monohydrate
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: Cyclophosphamide, Monohydrate
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: Cyclophosphamide, Monohydrate

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: Cyclophosphamide, Monohydrate
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: Cyclophosphamide, Monohydrate

Other Regulations

Other Classifications
WHMIS (Canada) CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
DSCL (EEC)
Cyclophosphamide, Monohydrate

R25- Toxic if swallowed.
R45- May cause cancer.
R46- May cause heritable genetic damage.
R61- May cause harm to the unborn child.

S28- After contact with skin, wash immediately with plenty of [***]
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 | 2 |
| Fire Hazard | 1 |
| Reactivity | 0 |
| Personal Protection | E |

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

Flammability

Reactivity

Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.

Lab coat.

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

Safety glasses.

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<table>
<thead>
<tr>
<th><strong>Section 16. Other Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSDS Code</strong></td>
</tr>
<tr>
<td><strong>References</strong></td>
</tr>
<tr>
<td><strong>Other Special Considerations</strong></td>
</tr>
<tr>
<td><strong>Validated by Sonia Owen on 8/11/2006.</strong></td>
</tr>
<tr>
<td><strong>Printed 9/11/2006.</strong></td>
</tr>
</tbody>
</table>

**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.