MATERIAL SAFETY DATA SHEET

Product Name: Morphine Sulfate Injection, USP

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer Name: Hospira, Inc.
Address: 275 North Field Drive
          Lake Forest, Illinois 60045
          USA

Emergency Telephone: CHEMTREC: 800 424-9300
                      Hospira, Inc.: 224 212-2055

Product Name: Morphine Sulfate Injection, USP
Synonyms: None

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Chemical Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine Sulfate</td>
<td>C_{34}H_{40}N_{2}O_{10}S</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Approximate Percent by Weight</th>
<th>CAS Number</th>
<th>RTECS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine Sulfate</td>
<td>0.05 - 5</td>
<td>64-31-3</td>
<td>QC8750000</td>
</tr>
<tr>
<td>Water</td>
<td>99</td>
<td>7732-18-5</td>
<td>ZC0110000</td>
</tr>
</tbody>
</table>

3. HAZARD INFORMATION

Emergency Overview: In clinical use, this material is used to treat pain. Possible target organs include the central nervous system, eyes, respiratory system, gastrointestinal tract, and cardiovascular system.

Occupational Exposure Potential: Information on the absorption of this compound via ingestion, inhalation or skin contact is not available. Avoid liquid aerosol generation and skin contact.

Signs and Symptoms: No signs or symptoms from occupational exposure are known. Clinical data suggest the following: constipation, nausea, vomiting, lightheadedness, dizziness, sedation, euphoria, sweating, edema, chills, tremor, flushing, altered blood pressure, palpitation, faintness, dry mouth, skin discoloration, hallucinations, blurred vision, urine retention, breathing difficulty, rash.

Medical Conditions Aggravated by Exposure: Hypersensitivity to the material and/or similar materials. Pre-existing ailments in the following organs: eyes, central nervous system, respiratory system, gastrointestinal system, female reproductive system.
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4. FIRST AID MEASURES

Eye Contact: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Skin Contact: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Inhalation: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic / supportive care as necessary.

Ingestion: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic / supportive care as necessary.

5. FIRE FIGHTING MEASURES

Flammability: Non-flammable

Fire & Explosion Hazard: None

Extinguishing Media: Use extinguishing media appropriate for primary cause of fire.

Special Fire Fighting Procedures: No special provisions required beyond normal fire fighting equipment such as flame and chemical resistant clothing and self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Cleanup and Disposal: Absorb with suitable material and clean affected area with soap and water. Dispose of materials according to the applicable federal, state, or local regulations.

7. HANDLING AND STORAGE

Handling: Protect from light by retaining in carton until contents have been used.

Storage: No special storage required for hazard control. For product protection store at controlled room temperature of 15-30°C (59-86°F).

Special Precautions: Protect from freezing, light and extreme heat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA-PEL</th>
<th>ACGIH-TLV</th>
<th>Hospira EEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine Sulfate</td>
<td>8 hr TWA: Not Established</td>
<td>8 hr TWA: Not Established</td>
<td>8 hr TWA: 5 mcg/m3 STEL: Not Established</td>
</tr>
</tbody>
</table>

Notes: OSHA PEL: US Occupational Safety and Health Administration – Permissible Exposure Limit
ACGIH TLV: American Conference of Governmental Industrial Hygienists – Threshold Limit Value.
EEL: Employee Exposure Limit.
TWA: 8 hour Time Weighted Average.
STEL: 15-minute Short Term Exposure Limit.
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Respiratory Protection  
Respiratory protection is not needed during normal product use.

Skin Protection  
If solution contact with unprotected skin is likely, use of impervious gloves is a prudent practice.

Eye Protection  
Eye protection is not required during expected product use conditions but may be warranted should a splash potential exist.

Engineering Controls  
Engineering controls are not needed during normal product use conditions.

9. PHYSICAL/CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Physical State</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Approximately that of water (100 °C, 212 °F).</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Approximately that of water (0 °C, 32 °F).</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Approximately that of water (17.5 mm Hg at 20 °C).</td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Approximately that of water (1.0).</td>
</tr>
<tr>
<td>Solubility</td>
<td>Aqueous solution</td>
</tr>
<tr>
<td>pH</td>
<td>2.5 – 6.0</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical Stability  
Stable under standard use and storage conditions.

Incompatibilities  
Alkalies, tannic acid, iodic acid, potassium permanganate, borax, chlorates, ferric chloride, iodides, lead acetate, magnesia, mercury bichloride.

Hazardous  
Toxic fumes of nitrogen oxides

Decomposition Products  
Not Determined.

11. TOXICOLOGICAL INFORMATION:

Acute Toxicity – Oral:

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>Percent</th>
<th>Test Type</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine Sulfate</td>
<td>100</td>
<td>LD50</td>
<td>461-600</td>
<td>mg/kg</td>
<td>Mice, Rats</td>
</tr>
</tbody>
</table>

LD50 is the dosage producing 50% mortality.  
Product contains between approximately 0.05-5% Morphine Sulfate.

Mutagenicity  
Mutagenic in micronucleus assay.  Mutagenic in the one or more mutagenicity bioassays.

Target Organ Effects  
In clinical use target organ effects include central nervous system, eyes, respiratory system, gastrointestinal tract, cardiovascular system, female reproductive system.

12. ECOLOGICAL INFORMATION:

Aquatic Toxicity  
Not Available
Product Name: Morphine Sulfate Injection, USP

13. DISPOSAL CONSIDERATIONS:
Waste Disposal Disposal should be performed in accordance with the federal, state or local regulatory requirements.

Container Handling and Disposal Dispose of container and unused contents in accordance with federal, state, and local regulations.

14. TRANSPORTATION INFORMATION
DOT Not Regulated

Notes: DOT - US Department of Transportation Regulations

15. REGULATORY INFORMATION
TSCA Status Not Regulated
CERCLA Status Not Regulated
SARA Status Not Regulated
RCRA Status Not Regulated
PROP 65 (Calif.) Not Regulated

Notes: TSCA Toxic Substance Control Act
CERCLA US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act
SARA Superfund Amendments and Reauthorization Act
RCRA US EPA, Resource Conservation and Recovery Act
Prop 65, California Proposition 65

16. OTHER INFORMATION:
MSDS Coordinator Global Occupational Toxicology
Date Prepared September 15, 2005
Date Revised October 21, 2008

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