1. IDENTIFICATION OF SUBSTANCE

<table>
<thead>
<tr>
<th>Name:</th>
<th>CAFFEINE INJECTION 10 mg/mL &amp; CAFFEINE, CITRATED SOLUTION 10 mg/mL</th>
</tr>
</thead>
</table>
| Manufacturer: | Department of Pharmacy  
Duke University Medical Center  
Box 3089  
Durham, NC 27710  
919-684-5125 |
| Information Department: | Occupational and Environmental Safety Office  
Duke University Medical Center  
Box 3914  
Durham, NC 27710  
919-684-5996 |
| Emergency Information: | Regional Poison Control Center  
800-848-6946 |

2. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Characterization/Description: | Caffeine solution |
| Synonym(s): | 3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione |

<table>
<thead>
<tr>
<th>Dangerous Components (CAS#, Hazardous Chemical, Percent):</th>
</tr>
</thead>
<tbody>
<tr>
<td>58-08-2 Caffeine 1%</td>
</tr>
<tr>
<td>7732-18-5 Water 99%</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Hazard Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeine is a human poison by ingestion and is reported as a human teratogen. This product may irritate eyes and skin upon contact. (Hazard description based on concentrated constituents; this product is an aqueous solution.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NFPA Ratings (scale 0-4):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health 2</td>
</tr>
<tr>
<td>Fire: 0</td>
</tr>
<tr>
<td>Reactivity: 0</td>
</tr>
</tbody>
</table>
TRADE NAME: CAFFEINE INJECTION 10 mg/mL &
CAFFEINE, CITRATED SOLUTION 10 mg/mL

### 4. FIRST AID MEASURES

**Inhalation:**

Remove victim to fresh air. Give oxygen or artificial respiration if necessary.

**Skin Contact:**

IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. Seek medical attention if warranted.

**Eye Contact:**

First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

**Ingestion:**

INDUCE VOMITING. Lower the head so that the vomit will not reenter the mouth or throat. IMMEDIATELY call a hospital or poison control center and prepare to transport the victim to a hospital. Locate activated charcoal or milk in case the medical advisor recommends administration.

If medical advice is not immediately available and the victim is conscious and not convulsing, give the victim a glass of milk or water.

If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open, and lay the victim on his/her side with the head lower than the body. Transport the victim IMMEDIATELY to a hospital.
5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Agents:**

Use CO\textsubscript{2}, dry chemical, water spray, or foam to fight fire. Consider appropriate extinguishing media for surrounding fire.

**Protective Equipment:**

Self-contained breathing apparatus and protective equipment for fire fighting.

6. ACCIDENTAL RELEASE MEASURES

**Personnel Precautions:**

Wear gloves (disposable surgical) and eye protection (chemical splash goggles).

**Environmental Precautions:**

None necessary under normal conditions of use.

**Measures for Cleaning/Collection:**

Use absorbent paper to pick up all liquid spill material. Seal the absorbent paper, as well as contaminated clothing, in a vapor-tight plastic bag for eventual disposal. Wash all contaminated surfaces with a soap and water solution.

7. HANDLING AND STORAGE

**Handling:**

Wear PPE when handling this material. Wash hands after handling.

**Storage:**

Store in a cool, dry, well-ventilated location.
8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls:

None necessary under conditions of normal use.

Control Parameters:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Limit</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeine</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Personal Protective Equipment:

**Respiratory Protection**
None necessary under conditions of normal use.

**Skin Protection**
Wear disposable surgical gloves when using this chemical. If this chemical comes into contact with your gloves, or if a tear/puncture develops, remove gloves at once and wash hands.

**Eye Protection**
Splash-proof safety goggles must be worn while handling this chemical.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Liquid

**pH:** 6.9

**Color and Odor:** Colorless; odorless

**Boiling/Freezing Points (°C):** Approx. same as water.

**Flashpoint (°C):** N/A

**Autoignition Temperature (°C):** N/A

**Explosion Properties:** N/A

**Vapor Pressure (mm Hg):** N/A

**Vapor Density (air = 1):** N/A

**Solubility:** Soluble in water (aqueous solution). Note: Caffeine is rendered more soluble in water by the addition of an equal quantity of citric acid.
10. STABILITY AND REACTIVITY

**General:** This product is considered stable.

**Materials to Avoid:** None specified.

**Hazardous Decomposition Products:** When heated to decomposition, product may emit CO, CO$_2$, and NO$_x$.

11. TOXICOLOGICAL INFORMATION

**Acute Toxicity:** Caffeine is toxic to the blood, lungs, nervous system, and mucous membranes. It is a human poison by ingestion and is a slight irritant of the skin and eye. The oral LD$_{50}$ for caffeine is 127 mg/kg (mouse); the oral TD$_{Lo}$ for man is reported as 13 mg/kg.

**Signs/Symptoms of Overexposure:** Exposure to ingested caffeine can cause convulsions, muscle spasms, tremors, poor muscle coordination, vomiting, and blood pressure increase. Continued excessive use in tea or coffee may lead to digestive disturbances, constipation, palpitations, shortness of breath, cardiac disorders, and depressed mental states.

**Chronic Toxicity:** This product is not considered a carcinogen by NTP, IARC, or OSHA. Caffeine is reported as a teratogen causing developmental abnormalities of the craniofacial and musculoskeletal systems, abortion, and stillbirth.

12. ECOLOGICAL EFFECTS

None anticipated under normal conditions of use.

13. DISPOSAL CONSIDERATIONS

Dispose of all waste and contaminated materials associated with this chemical as specified by existing local, state and federal regulations concerning hazardous waste disposal. Contact the Occupational and Environmental Safety Office for specific guidance.

14. TRANSPORT INFORMATION

**Proper shipping name (DOT):** Not regulated by this mode of transportation.

15. REGULATORY INFORMATION

Reported in EPA TSCA Inventory and Genetic Toxicology Program.

16. OTHER INFORMATION

This information is based on our present knowledge; however this shall not constitute a guarantee for any specific product features. No toxicity data are available on this specific formulation; this health hazard assessment is based on information that is available for its components.