AERCHEM INC.
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SECTION 1: IDENTIFICATION

Revision Date: 11/18/97
Product Name: Caffeine
Synonym: 3,7-dihydro-1,3,7-trimethyl-1H-purine-2,6 dione; 1,3,7-trimethylxanthine; trimethyl-1,3,7-dioxo-2,6-purine
Chemical Formula: C8-H10-N4-O2
CAS No.: 58-08-2

SECTION 2: PHYSICAL DATA

Physical Data:

Appearance and Odor: Odorless, white, fleecy masses, glistening needles or powder with a bitter taste.
Boiling point: 352°F (178°C) (sublimes)
Vapor Pressure (mmHg): 760 mmHg @ 178°C
Specific Gravity (Water=1): 1.23
Solubility in water: 2.17%; also, soluble in ethyl acetate, chloroform, pyrimidine, pyrrole, tetrahydrofuran solution; moderately soluble in alcohol, acetone; slightly soluble in petroleum ether,ether, benzene
Melting Point: 460°F (238°C)
Volatility: 0.5%
Vapor Density: 6.7

SECTION 3: FIRE AND EXPLOSION DATA

Fire and Explosion Information:

Flash Point: 1697°F (925°C)
Flammability: Combustible
Products of combustion: carbon oxides and nitrogen oxides
Extinguishing Media: dry chemical, carbon dioxide, water spray, or regular foam; for larger fire, use water spray, fog, or regular foam. Use agent suitable for type of surrounding fire. Avoid breathing vapors and dusts. Keep upwind.
Fire Fighting Procedures: Move container from fire area if you can do it without risk.
Unusual Fire and Explosion Hazards: Slight fire hazard when exposed to heat of flame. Dust-air mixtures may ignite or explode.

SECTION 4: REACTIVITY DATA

Reactivity Data:

Stable _____X_____ **Unstable** _____

Incompatibilities:

Acids (strong): Incompatible
Bases (strong): Incompatible
Chlorine water: Incompatible
Oxidizers (strong): Fire and explosion hazard

Hazardous Decomposition or byproducts: Thermal decomposition products may include toxic oxides of carbon and nitrogen

Hazardous Polymerization: Has not been reported to occur under normal temperatures and pressures.

SECTION 5: HEALTH HAZARD DATA

One grain or more is toxic, 200 micrograms per ml has been found to inhibit activity of the enzyme DNA polymerase.

Toxicity: Oral LD50 (rat):	192 mg /kg	LD50 oral mouse	127 mg/kg
LDLo oral child	320 mg/kg	LDLo oral woman	1g/kg
LDLo oral human	192 mg/kg	LD50 oral rabbit	224 mg/kg
TDLo oral infant	147000 µg/kg	LDLo cat oral	100 mg/kg
TDLo oral man	13 mg/kg	LD50 oral dog	140 mg/kg
LD50 oral guinea pig	230	LD50 oral hamster	230 mg/kg
LD50 subcut. rat	170 mg/kg	LD50 subcut. mouse	242 mg/kg

TDLo intraven. human	7 mg/kg	LDLo intraven woman	57 mg/kg
LD50 intraven mouse	62 mg/kg	LD50 intraven.rat	105 mg/kg

Mutagenic and tumorigenic data (RTECS); reproductive effects (RTECS)

Target effects: Poisoning may affect the central nervous system and heart.

Additional effects: May cross the placenta. May be excreted in breast milk. Alcohol may enhance toxic effects. Interactions with mediations have been reported.

Exposure effects:

General: Acute: very dangerous in case of ingestion. Slightly dangerous to dangerous in case of skin and eye contact (irritant), of inhalation. Very slightly to slightly dangerous in case of skin contact (permeator). Severe-overexposure can result in death. Can be fatal if inhaled or ingested. May irritate eyes and skin upon contact.

Chronic: Substance toxic to blood, lungs, nervous system, mucous membranes. Repeated or prolonged exposure can produce target organs damage. Repeated exposure may produce general deterioration of health by accumulation in one or many human organs.

Inhalation: Acute- may irritate nose and throat and cause coughing and chest discomfort. If sufficient quantities are absorbed, may cause poisoning as detailed in acute ingestion. No deaths were reported in rats exposed to 55 ppm for 4 hours.

Chronic - If sufficient quantities are absorbed, may cause poisoning as detailed in chronic ingestion.

Skin contact: Acute - may cause irritation. Chronic - no data available

Eye contact: Acute - may cause irritation. Chronic - no data available

Ingestion: Acute - low concentrations may cause a small decrease in heart rate. Ingestion of large amounts may result in headache, lightheadedness, dizziness, chills, fever, excitement, restlessness, nervousness, insomnia, mild delirium, hallucinations, tinnitus, constricted pupils, decreased visual field, amplyopia, diplopia, photophobia, and scintillating scotoma. Neurologic symptoms may persist for several days. May cause acid secretion, anorexia, hematemesis, abdominal cramps, diarrhea, and diuresis followed by oliguria and dehydration. Other effects may include alternating states of consciousness and muscle twitching, tremors, hypersthesia, hypertonicity or hypotonicity, trismus, opisthotonus and convulsions, slight increase in basal metabolic rate, metabolic acidosis, ketonuria, glyconuria, hyperglycemia, hypokalemia, and rhabdomyolysis have been reported. Other effect may include dyspnea, tachypnea, chest tightness, palpitations, increased in systolic blood pressure, and arrhythmia including tachycardia and extrasystoles. Seizures generally precede death.

Chronic - In addition to effect in acute exposure, agitation, disturbed sleep, caffeine induced psychosis, heartburn and hyperventilation may occur. Low grade fever and elevated plasma free fatty acid have been reported. Respiratory failure and cardiopulmonary arrest may occur. Prolonged use of high doses may result in tolerance, physical and psychological dependence. Symptoms of withdrawal may occur following abrupt cessation. Use of caffeine by pregnant women has been associated with increased incidences of spontaneous abortion, breech presentations, stillbirth, premature delivery, low birth weight, developmental abnormalities of the craniofacial and musculoskeletal systems and babies with decreased activity and decreased muscle tone. Other reproductive effects have been reported in animals. As evaluated by RTECS, administration to mice resulted in statistically significant increase in the incidence of carcinogenic tumors of the skin and appendages.

SECTION 6: FIRST AID

Inhalation: Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

Skin Contact: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.

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Eye Contact: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.

Ingestion: If the person is conscious and not convulsing, induce emesis by giving syrup of ipecac followed by water or by gastric lavage using activated charcoal whether or not vomiting has occurred. (If vomiting occurs keep the head below the hips to prevent aspiration). (Dreisbach, Handbook of Poisoning, 12th Ed.). Treat symptomatically and supportively. Gastric lavage should be performed by qualified medical personnel. Get medical attention immediately.

SECTION 7: SPILLAGE AND DISPOSAL PROCEDURES

Spillage: Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, with a clean shovel place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

Disposal: Observe all federal, state and local regulations when storing or disposing of this substance. For assistance, contact the district director of the Environmental Protection Agency.

SECTION 8: PRECAUTION TO BE TAKEN IN HANDLING AND STORING

May burn but does not ignite readily. Prevent dispersion of dust in air. Do not allow spilled material to contaminate water sources. Store away from incompatible substances. Store in a tightly closed container. Keep locked up, away from heat, away from sources of ignition, and in a cool, dry place.. Store in a separate locked cabinet because material is toxic.

SECTION 9: SPECIAL PROTECTION INFORMATION

Ventilation: Provide local exhaust or process enclosure ventilation system.

Eye Protection: Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Protective Gloves: Employee must wear appropriate protective gloves to prevent contact with this substance.

Respiratory Protection: The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration(NIOSH-MSHA).

Clothing: Employee must wear appropriate protective (impervious) clothing and equipment to prevent any possibility of skin contact with this substance.

Emergency wash facilities: Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

SECTION 10: TRANSPORT INFORMATION

DOT classification:	Class 6.1
UN#:	1544
PG:	III
Shipping name:	Alkaloid, solid, n.o.s. (Caffeine)
Labeling:	6- Harmful, stow away from foodstuffs