1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505
Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: DIMETHYL SULFATE

TRADE NAMES/SYNONYMS:
METHYL SULFATE; DIMETHYL MONOSULFATE; DIMETHYLSULFATE; DMS(METHYL SULFATE); DIMETHYL SULPHATE; SULFURIC ACID, DIMETHYL ESTER; BP-1195; RCRA U103; UN 1595; STCC 4933322; MAT07750; RTECS WS8225000

CHEMICAL FAMILY: organic, sulfates

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: DIMETHYL SULFATE
CAS NUMBER: 77-78-1
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=4 FIRE=2 REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: faint odor, onion odor
MAJOR HEALTH HAZARDS: potentially fatal if inhaled, harmful if swallowed, respiratory tract burns, skin burns, eye burns, mucous membrane burns, suspect cancer hazard (in animals)
PHYSICAL HAZARDS: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation (possibly severe), vomiting, diarrhea, loss of voice, irregular heartbeat, headache, drowsiness, blindness, bluish skin color, lung congestion, lung damage, liver damage, paralysis, convulsions, coma, death
LONG TERM EXPOSURE: cancer

SKIN CONTACT:
SHORT TERM EXPOSURE: burns, blisters, itching
LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), tearing
LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:
SHORT TERM EXPOSURE: same as effects reported in short term inhalation, burns
LONG TERM EXPOSURE: same as effects reported in short term exposure

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Moderate fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.
FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. Fight large fires from a protected location or safe distance. Stay away from the ends of tanks. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Water may be used to blanket fire.

FLASH POINT: 181 F (83 C) (OC)
AUTOIGNITION: 370 F (188 C)
FLAMMABILITY CLASS (OSHA): IIIA

6. ACCIDENTAL RELEASE MEASURES

WATER RELEASE:
Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills: Move containers away from spill to a safe area. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area. Store and handle in a detached building. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
DIMETHYL SULFATE:
1 ppm (5 mg/m3) OSHA TWA (skin)
0.1 ppm (0.5 mg/m3) OSHA TWA (skin) (vacated by 58 FR 35338, June 30, 1993)
0.1 ppm ACGIH TWA (skin)
0.1 ppm (0.5 mg/m3) NIOSH recommended TWA 10 hour(s) (skin)
VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
TEXTURE: oily
ODOR: faint odor, onion odor
MOLECULAR WEIGHT: 126.14
MOLECULAR FORMULA: C2-H6-O4-S
BOILING POINT: Not available
FREEZING POINT: -26 F (-32 C)
DECOMPOSITION POINT: 370 F (188 C)
VAPOR PRESSURE: 0.5 mmHg @ 20 C
VAPOR DENSITY (air=1): 4.35
SPECIFIC GRAVITY (water=1): 1.333
WATER SOLUBILITY: 2.8% @ 18 C
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, dioxane, acetone, aromatic solvents
Slightly Soluble: carbon disulfide, aliphatic solvents

10. STABILITY AND REACTIVITY

REACTIVITY: Contact with water or moist air may form flammable and/or toxic gases or vapors.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Dangerous gases may accumulate in confined spaces. Keep out of water supplies and sewers.

INCOMPATIBILITIES: bases, metal salts, oxidizing materials, combustible materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of sulfur, carbon

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

DIMETHYL SULFATE:
IRRITATION DATA: 10 mg/24 hour(s) open skin-rabbit severe; 100 mg/4 second(s) rinsed eyes-rabbit severe; 50 ug/24 hour(s) eyes-rabbit severe
TOXICITY DATA: 45 mg/m3/4 hour(s) inhalation-rat LC50; 205 mg/kg oral-rat LD50
CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Human Inadequate Evidence, Animal Sufficient Evidence, Group 2A; ACGIH: A3 -Confirmed Animal Carcinogen; EC: Category 2
LOCAL EFFECTS:
Corrosive: inhalation, skin, eye, ingestion
ACUTE TOXICITY LEVEL:
Highly Toxic: inhalation
Toxic: ingestion
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory disorders
TUMORIGENIC DATA: Available.
MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.

12. ECOLOGICAL INFORMATION
ECOTOXICITY DATA:
FISH TOXICITY: 7500 ug/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomis macrochirus)

ALGAL TOXICITY: 1300000 ug/L 0.25 week(s) (Cytogenetic) Blue-green algae (Anabaena variabilis)

ENVIRONMENTAL SUMMARY: Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U103. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Dimethyl sulfate
ID NUMBER: UN1595
HAZARD CLASS OR DIVISION: 6.1
PACKING GROUP: I
LABELING REQUIREMENTS: 6.1; 8
QUANTITY LIMITATIONS:
PASSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: Forbidden

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Dimethyl sulphate
UN NUMBER: UN1595
CLASS: 6.1; 8
PACKING GROUP/CATEGORY: I

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
Dimethyl sulfate: 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B):
Dimethyl sulfate: 500 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):
Dimethyl sulfate: 100 LBS RQ
SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
Dimethyl sulfate


STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following:
Dimethyl sulfate
Cancer (Jan 01, 1988)

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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