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: ETHYL MERCAPTAN

TRADE NAMES/SYNONYMS:
MTG MSDS 207; ETHANETHIOL; ETHYL SULFHYDRATE; MERCAPTOETHANE; ETHYL HYDROSULFIDE; ETHYL THIOALCOHOL; THIOETHANOL; THIOETHYL ALCOHOL; LPG ETHYL MERCAPTAN 1010; UN 2363; O-2712; 958-T; 7171-T; C2H6S; MAT09070; RTECS KI9625000

CHEMICAL FAMILY: mercaptans

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

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: ETHYL MERCAPTAN
CAS NUMBER: 75-08-1
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=1  FIRE=4  REACTIVITY=1

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: garlic odor
MAJOR HEALTH HAZARDS: central nervous system depression
PHYSICAL HAZARDS: Extremely flammable liquid and vapor. Vapor may cause flash fire. Contact with water or moist air may generate flammable and/or toxic gases.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, cough, lack of sense of taste, changes in body temperature, nausea, vomiting, diarrhea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, loss of coordination, bluish skin color, lung congestion, heart disorders, kidney damage, liver damage, brain damage, convulsions, unconsciousness, coma
LONG TERM EXPOSURE: no information is available
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
INGESTION:
SHORT TERM EXPOSURE: irritation, sore throat, nausea, stomach pain, headache, drowsiness, dizziness, loss of coordination
LONG TERM EXPOSURE: no information is available

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 medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

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

INGESTION: If a large amount is swallowed, get medical attention.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe 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.

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. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well
after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

**FLASH POINT:** -54.9 F (-48.3 C) (CC)
**LOWER FLAMMABLE LIMIT:** 2.8%
**UPPER FLAMMABLE LIMIT:** 18%
**AUTOIGNITION:** 570.0 F (298.9 C)
**FLAMMABILITY CLASS (OSHA):** IA

**HAZARDOUS COMBUSTION PRODUCTS:**
Thermal decomposition or combustion products: oxides of sulfur, oxides of carbon

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### 6. ACCIDENTAL RELEASE MEASURES

**OCCUPATIONAL RELEASE:**
Avoid heat, flames, sparks and other sources of ignition. 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. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

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### 7. HANDLING AND STORAGE


**HANDLING:** When using, do not eat, drink or smoke.

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### 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**EXPOSURE LIMITS:**
**ETHYL MERCAPTAN:**
10 ppm (25 mg/m3) OSHA ceiling
0.5 ppm (1.3 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
0.5 ppm ACGIH TWA
0.5 ppm (1.3 mg/m3) NIOSH recommended ceiling 15 minute(s)
VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. 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.

5 ppm
Any air-purifying half-mask respirator equipped with organic vapor cartridge(s).
Any supplied-air respirator.

12.5 ppm
Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with organic vapor cartridge(s).

25 ppm
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any supplied-air respirator with a tight-fitting facepiece that is operated in a continuous-flow mode.
Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s).
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.

500 ppm
Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.
Emergency or planned entry into unknown concentrations or IDLH conditions -
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 organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
ODOR: garlic odor
MOLECULAR WEIGHT: 62.14
MOLECULAR FORMULA: C2-H6-S
BOILING POINT: 95.2 F (35.1 C)
FREEZING POINT: -234.0 F (-147.8 C)
VAPOR PRESSURE: 442 mmHg @ 20 C
VAPOR DENSITY (air=1): 2.14
SPECIFIC GRAVITY (water=1): 0.8315 @ 25 C
WATER SOLUBILITY: 6.7% @ 20 C (reacts)
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: 0.001 ppm
EVAPORATION RATE: Not available
VIScosity: 0.3155 cP @ 20 C
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, naphtha, acetone, dilute alkali

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. Keep out of water supplies and sewers.

INCOMPATIBILITIES: acids, oxidizing materials, combustible materials

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

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

ETHYL MERCAPTAN:
IRRITATION DATA: 500 mg/24 hour(s) skin-rabbit mild; 84 mg eyes-rabbit; 100 mg/24 hour(s) eyes-rabbit moderate
TOXICITY DATA: 4420 ppm/4 hour(s) inhalation-rat LC50; 682 mg/kg oral-rat LD50
ACUTE TOXICITY LEVEL:
Moderately Toxic: inhalation, ingestion
TARGET ORGANS: central nervous system

12. ECOLOGICAL INFORMATION
ECOTOXICITY DATA:
FISH TOXICITY: 20000 ug/L 0.033 hour(s) (Behavior) Aholehole (Kuhlia sandvicensis)

INVERTEBRATE TOXICITY: 170 ug/L 48 hour(s) LC50 (Mortality) Water flea (Daphnia magna)

FATE AND TRANSPORT:
KOW: 1202.26 (log = 3.08) (estimated from water solubility)

KOC: 22 (log = 1.34) estimated

HENRY'S LAW CONSTANT: 4.5 E -3

BIOCONCENTRATION: 1.17 (estimated from water solubility)

ENVIRONMENTAL SUMMARY: Leaches through the soil or the sediment at a very rapid rate. Accumulates very little in the bodies of living organisms. Highly volatile from water.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001, D003. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Ethyl mercaptan
ID NUMBER: UN2363
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: I
LABELING REQUIREMENTS: 3
QUANTITY LIMITATIONS:
PASSSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: 30 L
MARINE POLLUTANT: ETHYL MERcaptAN

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Ethyl mercaptan
UN NUMBER: UN2363
CLASS: 3
PACKING GROUP/CATEGORY: I

15. REGULATORY INFORMATION
U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: No


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: B2.

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

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Listed on DSL.

16. OTHER INFORMATION

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