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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Matheson Tri-Gas, Inc.

The telephone numbers listed below are emergency numbers, please contact your local branch for routine inquiries.

USA
959 Route 46 East
Parsippany, New Jersey
07054-0624 USA
Phone: 973-257-1100

CANADA
530 Watson Street
Whitby, Ontario
L1N 5R9 Canada
Phone: 905-668-3570

SUBSTANCE: TETRACHLOROETHYLENE
SYMBOL: \( \text{C}_2\text{Cl}_4 \)

TRADE NAMES/SYNONYMS:
PERCHLOROETHYLENE; 1,1,2,2-TETRACHLOROETHYLENE; NEMA; ETHYLENE TETRACHLORIDE; CARBON DICHLORIDE; PERCLENE; PERC; ANKILOSTIN;
TETRACHLORETHYLENE; PERCHLORETHYLENE; TETRACAP; TETRACHLOROETHENE;
DIDAKENE; PCE; RCRA U210; NCI-C04580; ENT 1,860; STCC 4940355; UN 1897; C2CL4;
MAT22900; RTECS KX3850000

CHEMICAL FAMILY: halogenated, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Mar 16 1999

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TETRACHLOROETHYLENE

CAS NUMBER: 127-18-4

EC NUMBER (EINECS): 204-825-9

EC INDEX NUMBER: 602-028-00-4

PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

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

WHMIS CLASSIFICATION: D2

EC CLASSIFICATION (ASSIGNED):  
N Dangerous for the Environment  
Carcinogen Category 3  
R 40-51/53

EC Classification may be inconsistent with independently-researched data.

EMERGENCY OVERVIEW:
Color: colorless

Physical Form: volatile liquid

Odor: faint odor, sweet odor

Major Health Hazards: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, suspect cancer hazard (in animals)

POTENTIAL HEALTH EFFECTS:

INHALATION:
  Short Term Exposure: irritation, metallic taste, ringing in the ears, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, blurred vision, lung congestion, kidney damage, liver damage, coma
  Long Term Exposure: asthma, menstrual disorders, reproductive effects, cancer

SKIN CONTACT:
  Short Term Exposure: irritation (possibly severe), blisters, symptoms of drunkenness
  Long Term Exposure: same as effects reported in short term exposure

EYE CONTACT:
  Short Term Exposure: irritation, tearing
  Long Term Exposure: same as effects reported in short term exposure

INGESTION:
  Short Term Exposure: vomiting, digestive disorders, headache, symptoms of drunkenness
  Long Term Exposure: kidney damage, liver damage, cancer

CARCINOGEN STATUS:
OSHA: N
NTP: Y
IARC: Y

4. FIRST AID MEASURES

INHALATION:
When safe to enter area, remove from exposure. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Keep warm and at rest. Get medical attention immediately.

SKIN CONTACT:
Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.

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. Get medical attention immediately.

INGESTION:
If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious,
NOTE TO PHYSICIAN:
For inhalation, consider oxygen. For ingestion, consider gastric lavage. Consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS:
Negligible fire hazard.

EXTINGUISHING MEDIA:
carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING:
Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile).

FLASH POINT:
No data available.

6. ACCIDENTAL RELEASE MEASURES

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

WATER RELEASE:

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Small liquid spills: Absorb with sand or other non-combustible material. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Reportable Quantity (RQ): 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

Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION
EXPOSURE LIMITS:

TETRACHLOROETHYLENE:
TETRACHLOROETHYLENE (PERCHLOROETHYLENE):
100 ppm OSHA TWA
200 ppm OSHA ceiling
300 ppm OSHA peak 5 minute(s)/3 hour(s)
25 ppm (170 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
25 ppm (170 mg/m3) ACGIH TWA
100 ppm (685 mg/m3) ACGIH STEL

VENTILATION: Provide local exhaust or process enclosure 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.
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 full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Escape -
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid

APPEARANCE: clear

COLOR: colorless

PHYSICAL FORM: volatile liquid

ODOR: faint odor, sweet odor

MOLECULAR WEIGHT: 165.83

MOLECULAR FORMULA: CL2-C-C-CL2

BOILING POINT: 250 F (121 C)

FREEZING POINT: -2 F (-19 C)
VAPOR PRESSURE: 14 mmHg @ 20 C

VAPOR DENSITY (air=1): 5.83

SPECIFIC GRAVITY (water=1): 1.6227

WATER SOLUBILITY: 0.015%

PH: Not available

VOLATILITY: Not available

ODOR THRESHOLD: 50 ppm

EVAPORATION RATE: 2.8 (butyl acetate=1)

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SOLVENT SOLUBILITY:
Soluble: alcohol, ether, benzene, chloroform, oils

10. STABILITY AND REACTIVITY

REACTIVITY:
Stable at normal temperatures and pressure.

CONDITIONS TO AVOID:
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES:
acids, metals, bases, oxidizing materials, combustible materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION:
Will not polymerize.

11. TOXICOLOGICAL INFORMATION

TETRACHLOROETHYLENE:

IRRITATION DATA:
810 mg/24 hour(s) skin-rabbit severe; 500 mg/24 hour(s) skin-rabbit mild; 162 mg eyes-rabbit mild; 500 mg/24 hour(s) eyes-rabbit mild

TOXICITY DATA:
34200 mg/m3/8 hour(s) inhalation-rat LC50; >10000 mg/kg skin-rabbit LD50 (Dow); 2629 mg/kg oral-rat LD50

CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Human Limited Evidence,
LOCAL EFFECTS:
Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation

TARGET ORGANS:
central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
eye disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, nervous system disorders, skin disorders and allergies

TUMORIGENIC DATA:
Available.

MUTAGENIC DATA:
Available.

REPRODUCTIVE EFFECTS DATA:
Available.

ADDITIONAL DATA:
May be excreted in breast milk. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY:
8430 ug/L 96 hour(s) LC50 (Mortality) Flagfish (Jordanella floridae)

INVERTEBRATE TOXICITY:
7500 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

ALGAL TOXICITY:
509000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

FATE AND TRANSPORT:

BIOCONCENTRATION:
49 ug/L 1-21 hour(s) BCF (Residue) Bluegill (Lepomis macrochirus) 3.43 ug/L

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U210. Hazardous Waste Number(s): D039. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.7 mg/L. Dispose in accordance with all applicable regulations.
### 14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS;
PACKING GROUP; LABEL:
Tetrachloroethylene-UN1897; 6.1; III; Keep away from food

### 15. REGULATORY INFORMATION

U.S. REGULATIONS:
- **TSCA INVENTORY STATUS:** Y
- **TSCA 12(b) EXPORT NOTIFICATION:** Not listed.
- **CERCLA SECTION 103 (40CFR302.4):** Y
  - Tetrachloroethylene (Perchloroethylene): 100 LBS RQ
- **SARA SECTION 302 (40CFR355.30):** N
- **SARA SECTION 304 (40CFR355.40):** N
- **SARA SECTION 313 (40CFR372.65):** Y
  - Tetrachloroethylene (Perchloroethylene)

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):
- **ACUTE:** Y
- **CHRONIC:** Y
- **FIRE:** N
- **REACTIVE:** N
- **SUDDEN RELEASE:** N


STATE REGULATIONS:
- **California Proposition 65:** Y
  - Known to the state of California to cause the following:
    - Tetrachloroethylene (Perchloroethylene)
    - Cancer (Apr 01, 1988)

EUROPEAN REGULATIONS:
- **EC NUMBER (EINECS):** 204-825-9

**EC RISK AND SAFETY PHRASES:**

<table>
<thead>
<tr>
<th>R 40</th>
<th>Possible risks of irreversible effects.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 51/53</td>
<td>Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
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<tr>
<td>S 2</td>
<td>Keep out of reach of children.</td>
</tr>
<tr>
<td>S 23</td>
<td>Do not breathe gas, fumes, vapour, or spray.</td>
</tr>
<tr>
<td>S 36/37</td>
<td>Wear suitable protective clothing and gloves.</td>
</tr>
</tbody>
</table>
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

CONCENTRATION LIMITS:
C≥1% Xn R 40

16. OTHER INFORMATION

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