TRICHLOROACETALDEHYDE

TCH

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Anhydrous chloral
Acetaldehyde, trichloro
Chloral
Ethanal, trichloro-

Oily liquid | Colorless | Pungent, irritating

Sinks and mixes. Combines with water to yield chloral hydrate.

KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.
Wear positive pressure breathing apparatus and chemical protective suit.
Call fire department.
Stay upwind and use water spray to knock down vapor.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Combustible.
POISONOUS GASES ARE PRODUCED IN FIRE OR WHEN HEATED.
Containers may explode in fire.
Wear positive pressure breathing apparatus and chemical protective suit.
Fight fire from safe distance or protected location.
Extinguish small fire: dry chemical, carbon dioxide, water spray or foam; large fires: water spray, fog or foam.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
POISONOUS. MAY BE FATAL IF INHALED.
Irritating to eyes, skin and respiratory tract.
Inhalation causes sore throat, shortness of breath, drowsiness, irritation of respiratory tract, unconsciousness.
Move victim to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
POISONOUS. MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN.
May burn skin and eyes.
IF IN EYES OR ON SKIN, immediately flush contaminated area with running water for at least 15 minutes; hold upper and lower eyelids open occasionally if appropriate.
Speed in removing material from skin is extremely important.
Remove and isolate contaminated clothing at the site.
Effects may be delayed. Keep victim under observation.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

Effects of low concentration on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: CCl_3CHO
2.3 IMO/UN Designation: 6.1/2075
2.4 DOT ID No.: 2075
2.5 CAS Registry No.: 75-87-6
2.6 NAERG Guide No.: 153
2.7 Standard Industrial Trade Classification: 51621

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Wear positive pressure breathing apparatus and special chemical protective clothing.
3.2 Symptoms Following Exposure: INHALATION: Sore throat, shortness of breath, drowsiness, irritation of respiratory tract, unconsciousness. EYES: Redness, pain and blurred vision. SKIN: Redness and pain. INGESTION: Dizziness, drowsiness, nausea, and unconsciousness. Acute hazard: Poison may be fatal if inhaled, swallowed, or absorbed through skin.
3.3 Treatment of Exposure: INHALATION: Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES OR SKIN: In case of contact with material, immediately flush eyes or skin with running water for at least 15 minutes. Hold upper and lower eyelids open occasionally. Speed in removing material from skin is of extreme importance. Remove and isolate contaminated clothing at the site. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. INGESTION: If victim is unconscious or having convulsions, do nothing except keep victim warm.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 4; LD_{50} = 23 mg/kg
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Chronic respiratory exposure in animals caused decreases in kidney function, liver function, growth rate and serum transaminase activity along with changes in the central nervous system and in blood factors.
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations.
3.11 Liquid or Solid Characteristics: Severe skin irritant and is very injurious to the eyes. Contact may cause burns to skin and eyes.
3.12 Odor Threshold: 0.047 ppm
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 167°F. (procedure not identified)
4.2 Flammable Limits in Air: Currently not available
4.3 Fire Extinguishing Agents: Small fires: Dry chemical, carbon dioxide, water spray or foam. Large fires: Water spray, fog or foam.
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Contain toxic and irritating gases including phosgene.
4.6 Behavior in Fire: Decomposes in the presence of heat of fire to produce toxic and irritating gases.
4.7 Auto Ignition Temperature: Currently not available
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: Not pertinent
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 7.1 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 4.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: Forms water-soluble hydrate.
5.2 Reactivity with Common Materials: Currently not available
5.3 Stability During Transport: Stable (Avoid exposure to sunlight)
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: Currently not available
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: It is estimated that fish in rivers, ponds, lakes, and reservoirs will bioconcentrate chloral 6.7 times the water concentration.
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 1
Human Oral hazard: 2
Human Contact hazard: 0
Reduction of amenities: 0

7. SHIPPING INFORMATION

7.1 Grades of Purity: 40% Aqueous solution
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: Not listed
7.4 Venting: Not listed
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: Currently not available
7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Not listed
8.2 49 CFR Class: Not pertinent
8.3 49 CFR Package Group: Not listed.
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	3
Flammability (Red).....	-
Instability (Yellow).....	-

8.6 EPA Reportable Quantity: 5000 pounds
8.7 EPA Pollution Category: D
8.8 RCRA Waste Number: U034
8.9 EPA FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 147.38
9.3 Boiling Point at 1 atm: 207.9°F. = 97.7°C. = 370.9°K.
9.4 Freezing Point: –71.5°F. = –57.5°C. = 215.7°K.
9.5 Critical Temperature: Currently not available
9.6 Critical Pressure: Currently not available
9.7 Specific Gravity: 1.510 at 20°C.
9.8 Liquid Surface Tension: 25.34 dynes/cm = 0.0253 N/m at 19.4°C.
9.9 Liquid Water Interfacial Tension: Not pertinent
9.10 Vapor (Gas) Specific Gravity: 5.1
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: 103.4 Btu/lb = 57.5 cal/g = 2.4 X 10^5 J/kg
9.13 Heat of Combustion: Currently not available
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Currently not available
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	94.300		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	MISCIBLE	-25 0 25 50 75 100 125 150 175	0.071 0.130 0.241 0.444 0.820 1.514 2.794 5.157 9.519	-25 0 25 50 75 100 125 150 175	0.00150 0.00279 0.00517 0.00959 0.01778 0.03296 0.06111 0.11332 0.21011		CURRENTLY NOT AVAILABLE