MALATHION

MLT

CAUTIONARY RESPONSE INFORMATION

Common Synonyms			
Cythion insecticide	Liquid	Yellow to dark brown	Skunk-like odor
	Sinks in water. Freezing point is 37°F.		

Keep people away. AVOID CONTACT WITH LIQUID.
Wear chemical protective suit with self-contained breathing apparatus.
Call fire department.
Notify local health and pollution control agencies.

Fire

Combustible.
POISONOUS GASES ARE PRODUCED IN FIRE AND WHEN HEATED.
Containers may explode in fire.
Wear chemical protective suit with self-contained breathing apparatus.
Extinguish with dry chemical, carbon dioxide, water, or foam.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

LIQUID
POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.
Irritating to eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
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
Contain
Collection Systems: Pump
Chemical and Physical Treatment:
Absorb
Clean shore line

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: $C_{10}H_{19}O_6PS_2$
2.3 IMO/UN Designation: 6.1/2783
2.4 DOT ID No.: 2783
2.5 CAS Registry No.: 121-75-5
2.6 NAERG Guide No.: 152
2.7 Standard Industrial Trade Classification: 51631

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Wear self-contained breathing apparatus (or respirator for organophosphate pesticides) and rubber clothing while fighting fires of malathion with chlorine bleach solution. All clothing contaminated by fumes and vapors must be decontaminated.

3.2 Symptoms Following Exposure: Exposure to fumes from a fire or to liquid causes headache, blurred vision, constricted pupils of the eyes, weakness, nausea, cramps, diarrhea, and tightness in the chest. Muscles twitch and convulsions may follow. The symptoms may develop over a period of 8 hours.

3.3 Treatment of Exposure: Speed is essential. INHALATION: in the nonbreathing victim immediately institute artificial respiration, using the mouth-to-mouth, the mouth-to-nose, or the mouth-to-oropharyngeal method. Call physician INGESTION: administer milk, water or salt-water and induce vomiting repeatedly. SKIN OR EYE CONTACT: flood and wash exposed skin areas thoroughly with water. Remove contaminated clothing under a shower. Administer atropine, 2 mg(1/30 gr) intramuscularly or intravenously as soon as any local or systemic signs or symptoms of an intoxication are noted; repeat the administration of atropine every 3-8 min. until signs of atropinization (mydriasis, dry mouth, rapid pulse, hot and dry skin) occur; initiate treatment in children with 1 mg of atropine. Watch respiration, and remove bronchial secretions if they appear to be obstructing the airway; intubate if necessary. Give 2-PAM (Pralidoxime; Protopam), 2.5 gm in 100 ml of sterile water or in 5% dextrose and water, intravenously, slowly, in 15-30 min.; if sufficient fluid is not available, give 1 gm of 2-PAM in 3 ml of distilled water by deep intramuscular injection; repeat this every half hour if respiration weakens or if muscle fasciculation or convulsions recur.

3.4 TLV-TWA: 10 mg/m^3
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5g/kg(rat)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 Vapor (Gas) Irritant Characteristics: None likely
3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: 250 mg/m^3
3.14 OSHA PEL-TWA: 15 mg/m^3 (total dust)
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: >325°F
4.2 Flammable Limits in Air: Currently not available
4.3 Fire Extinguishing Agents: Dry chemical, carbon dioxide, water spray, foam
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Vapors and fumes from fires are hazardous. They include sulfur dioxide and phosphoric acid.
4.6 Behavior in Fire: Gives off hazardous fumes. Area surrounding fire should be diked to prevent water runoff.
4.7 Auto Ignition Temperature: Currently not available
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 92.8 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 22.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: None
5.2 Reactivity with Common Materials: No hazardous reaction
5.3 Stability During Transport: Not pertinent
5.4 Neutralizing Agents for Acids and Caustics: Liquid bleach solution for decontamination.
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity:
0.09 ppm/96 hr/bluegill/TL_m/fresh water
0.033-0.083 ppm/96 hr/marine crustaceae/LC_{50}
6.2 Waterfowl Toxicity: LD_{50} = 1485 mg/kg
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 4
Human Oral hazard: 2
Human Contact hazard: I
Reduction of amenities: XX

7. SHIPPING INFORMATION

7.1 Grades of Purity: CYTHION or Malathion ULV Concentrate Insecticide. Was sold under several trade names.
7.2 Storage Temperature: Below 120°F. Decomposition (non-hazardous) occurs at higher temperatures.
7.3 Inert Atmosphere: Currently not available
7.4 Venting: Currently not available
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: ORM-A
8.2 49 CFR Class: Not pertinent
8.3 49 CFR Package Group: Not listed.
8.4 Marine Pollutant: Yes
8.5 NFPA Hazard Classification: Not listed
8.6 EPA Reportable Quantity: 100 pounds
8.7 EPA Pollution Category: B
8.8 RCRA Waste Number: Not listed
8.9 EPA FWPCA List: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 330.36
9.3 Boiling Point at 1 atm: Very high
9.4 Freezing Point: 37°F = 2.9°C = 276°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.234 at 25°C (liquid)
9.8 Liquid Surface Tension: 37.1 dynes/cm = 0.0371 N/m at 24°C
9.9 Liquid Water Interfacial Tension: 19 dynes/cm = 0.019 N/m at 24°C
9.10 Vapor (Gas) Specific Gravity: Not pertinent
9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
9.12 Latent Heat of Vaporization: Not pertinent
9.13 Heat of Combustion: Currently not available
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
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
77	77.089	85	0.380		N	70	45.270
78	77.089	90	0.384		O	72	42.680
79	77.089	95	0.389		T	74	40.260
80	77.089	100	0.393			76	37.990
81	77.089	105	0.398		P	78	35.870
82	77.089	110	0.402		E	80	33.880
83	77.089	115	0.406		R	82	32.020
84	77.089	120	0.411		T	84	30.270
85	77.089	125	0.415		I	86	28.620
86	77.089	130	0.420		N	88	27.080
87	77.089	135	0.424		E	90	25.630
88	77.089	140	0.429		N	92	24.270
89	77.089	145	0.433		T	94	22.990
90	77.089	150	0.438			96	21.780
91	77.089					98	20.650
92	77.089					100	19.580
93	77.089					102	18.580
94	77.089					104	17.630
95	77.089					106	16.740
96	77.089					108	15.900
97	77.089					110	15.100
98	77.089					112	14.350
99	77.089					114	13.650
100	77.089					116	12.980
101	77.089					118	12.350
102	77.089					120	11.750

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
77	0.014		N		N		N
			O		O		O
			T		T		T
			P		P		P
			E		E		E
			R		R		R
			T		T		T
			I		I		I
			N		N		N
			E		E		E
			N		N		N
			T		T		T