TETRAETHYL PYROPHOSPHATE

TEP

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Bladan
Ethylpyrophosphate
Killax
Mortopal
Nitos
T.E.P.
T.E.P.P.
Tetron
Vapotone

Liquid | Colorless to yellow | Faint fruity odor

Mixes with water.

KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.
Wear rubber overclothing (including gloves).
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Not flammable.
POISONOUS GASES ARE PRODUCED WHEN HEATED.

Exposure

CALL FOR MEDICAL AID.

LIQUID
POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.
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
Dilute and disperse

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: $(C_2H_5O)_2POOPO(OC_2H_5)_2$ or $(C_2H_5)_4P_2O_7$
2.3 IMO/UN Designation: 6.1/1705
2.4 DOT ID No.: 3018
2.5 CAS Registry No.: 107-49-3
2.6 NAERG Guide No.: 152
2.7 Standard Industrial Trade Classification: 51631

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Mask with canister approved for organic phosphate pesticides; goggles or face shield; rubber gloves and other protective clothing to prevent contact with skin.
3.2 Symptoms Following Exposure: Contact with liquid causes irritation of eyes and skin. Compound can be absorbed through skin. Ingestion of liquid or inhalation of mist causes nausea, vomiting, mental confusion, abdominal pain, sweating, giddiness, apprehension, and restlessness; later, muscular twitching of eyelids and tongue begin, then other muscles of face and neck become involved; pulmonary edema, ataxia, tremor, and convulsions may advance to coma.
3.3 Treatment of Exposure: Call physician for all exposures to this compound. INHALATION: support respiration; keep airway clear; use artificial respiration if breathing is difficult or has stopped. EYES: flush with water immediately after contact for at least 15 min. SKIN: remove victim's clothing and shoes immediately using rubber gloves; quickly wipe off affected area with clean cloths; immediately follow with a shower using plenty of soap; if complete shower is impossible, wash affected skin, hair, and fingernails repeatedly with soap and water using clean cloths each time to prevent spreading the contamination. INGESTION: induce vomiting by putting a finger down the throat or by giving warm salt water (one tablespoon salt per glass). Repeat until vomit fluid is clear (save fluid for physician's examination); if vomiting cannot be induced within five minutes, have victim drink plenty of milk or water; have him lie down and keep him warm; if there is difficulty in breathing due to increased secretions, chest may be cleared by propping patient up; if he stops breathing, use artificial or mouth-to-mouth respiration, preferably through an airway; wash victim's mouth of contamination; mechanical resuscitator should be used if available; oxygen may be necessary; keep patient under observation for 24 hrs.
3.4 TLV-TWA: 0.004 ppm (skin)
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 4; LD_{50} <50 mg/kg
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 Vapor (Gas) Irritant Characteristics: Currently not available
3.11 Liquid or Solid Characteristics: Currently not available
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: 5 mg/m^3 (skin)
3.14 OSHA PEL-TWA: 0.05 mg/m^3 (skin)
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: Not flammable
4.2 Flammable Limits in Air: Not flammable
4.3 Fire Extinguishing Agents: Not pertinent
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Highly toxic gases and vapors of unburned material and phosphoric acid are formed in fires.
4.6 Behavior in Fire: Water streams applied to adjacent fires will spread contamination of pesticide over wide area.
4.7 Auto Ignition Temperature: Not pertinent
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Not pertinent
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: Not pertinent.
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent.
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: Reacts slowly to form phosphoric acid
5.2 Reactivity with Common Materials: Corrosive to aluminum, slowly corrosive to copper, brass, zinc, and tin
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Flush with water, rinse with sodium bicarbonate or lime solution.
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: 1.0 ppm/96 hr/fathead/TL_m/fresh water
500 ppm/*/marine plankton/no growth or lethal/salt water
*Time period not specified.
6.2 Waterfowl Toxicity: LD_{50} = 3.56 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: 4
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

7.1 Grades of Purity: Technical: 40% plus 60% related ethyl phosphates; Aerosols (5-10%) (Class A poisons); Dusts (0.66-1.2%); Sprays 10-40%.
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Open
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: Poison
8.2 49 CFR Class: 6.1
8.3 49 CFR Package Group: I
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification: Not listed
8.6 EPA Reportable Quantity: 10 pounds
8.7 EPA Pollution Category: A
8.8 RCRA Waste Number: P111
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: 290.2
9.3 Boiling Point at 1 atm: Not pertinent
9.4 Freezing Point: Not pertinent
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.18 at 25°C (liquid)
9.8 Liquid Surface Tension: Currently not available
9.9 Liquid Water Interfacial Tension: Not pertinent
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: Not pertinent
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
52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86	74.209 74.139 74.070 74.000 73.940 73.870 73.799 73.730 73.660 73.589 73.520 73.450 73.379 73.309 73.240 73.169 73.099 73.030		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

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		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT