NALED

NLD

CAUTIONARY RESPONSE INFORMATION

Common Synonyms			
Arthodibrom Bromex Dibrom 1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate	Solid or liquid	White (solid) Light straw (liquid)	Slightly pungent
	Sinks and mixes slowly with water.		

Evacuate.
Keep people away. Avoid contact with liquid.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Not flammable.

Exposure

CALL FOR MEDICAL AID.
SPRAY OR DUST
POISONOUS IF INHALED.
Irritating to skin and eyes.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID OR SOLID
POISONOUS IF SWALLOWED.
Irritating to skin and 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
Collection Systems: Pump; Dredge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: $C_4H_7Br_2Cl_2O_4P$
2.3 IMO/UN Designation: 6.1/2783 (>2.5%); 9/2783 (<25%)
2.4 DOT ID No.: 2783
2.5 CAS Registry No.: 300-76-5
2.6 NAERG Guide No.: 152
2.7 Standard Industrial Trade Classification: 51631

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Rubber gloves, self-contained breathing apparatus, protective clothing.
3.2 Symptoms Following Exposure: INHALATION OR INGESTION: Symptoms secondary to cholinesterase inhibition are: headache, giddiness, nervousness, blurred vision, weakness, nausea, cramps, diarrhea, chest discomfort, sweating, miosis, tearing, salivation, and other excessive respiratory tract secretion, vomiting, cyanosis, muscle twitching, and convulsions. EYES: Irritating. SKIN: Irritating-can cause dermatitis.
3.3 Treatment of Exposure: Call a physician. INHALATION: Artificial respiration when needed. EYES: Irrigate with physiological saline or water. SKIN: Remove clothing and bathe thoroughly using lots of water and soap. When skin appears clear, bathe or swab with ethyl alcohol. INGESTION: Induce vomiting, give milk or water, and induce vomiting again. OTHER: Atropinize the patient immediately with 1 to 4 mg IM. To maintain atropinization, 2-mg doses at intervals of 15 to 60 minutes.
3.4 TLV-TWA: 3 mg/m^3.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 3; LD_{50} = 50 to 500 mg/kg.
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Cholinesterase inhibition persists for several weeks making person more vulnerable in case of additional exposure. Exposure of rats at 0.3 to 2.5 mg/l 4 hours daily for 6 months caused emphysema, interstitial pneumonia, bronchitis, and peribronchitis. Liver, spleen, and brain damage was noted.
3.10 Vapor (Gas) Irritant Characteristics: Dangerous concentrations of vapor are not produced under normal conditions.
3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain may cause smarting and reddening of skin.
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: 200 mg/m^3
3.14 OSHA PEL-TWA: 3 mg/m^3
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: Currently not available
4.4 Fire Extinguishing Agents Not to Be Used: Currently not available
4.5 Special Hazards of Combustion Products: Currently not available
4.6 Behavior in Fire: Currently not available
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: No reaction
5.2 Reactivity with Common Materials: Unstable in presence of Iron
5.3 Stability During Transport: Stable under anhydrous conditions. Unstable in alkaline conditions. Degraded by sunlight.
5.4 Neutralizing Agents for Acids and Caustics: Currently not available
5.5 Polymerization: Currently not available
5.6 Inhibitor of Polymerization: Currently not available

6. WATER POLLUTION

6.1 Aquatic Toxicity:
24-hour LC_{50} (Bluegills) = 0.22 mg/l
48-hour LC_{50} (Brook trout) = 0.078 mg/l
96-hour LC_{50} (Bluegills) = 0.18 mg/l
24-hour LC_{50} (Rainbow trout) = 1.3 mg/l at 1.6°C, 0.62 mg/l at 7.2°C, and 0.24 mg/l at 12.7°C
6.2 Waterfowl Toxicity: Oral LD_{50} (Mallards) = 52.2 mg/kg Oral LD_{50} (Canada geese) = 36.9 mg/kg
6.3 Biological Oxygen Demand (BOD): Hydrolyzes; Degrades rapidly in soil and water.
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: -
Damage to living resources: 4
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

7.1 Grades of Purity: Technical, 93%
7.2 Storage Temperature: Currently not available
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: Not listed.
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: 10 pounds
8.7 EPA Pollution Category: A
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: Solid
9.2 Molecular Weight: 381
9.3 Boiling Point at 1 atm: ~392°F = ~200°C = ~473.2°K
9.4 Freezing Point: Pure 80.6°F = 27°C = 300.2°K
9.5 Critical Temperature: Currently not available
9.6 Critical Pressure: Currently not available
9.7 Specific Gravity: 1.97 at 20°C
9.8 Liquid Surface Tension: Currently not available
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 13.1 (calculated)
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: Currently not available
9.13 Heat of Combustion: Currently not available
9.14 Heat of Decomposition: Currently not available
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Currently not available
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
	CURRENTLY NOT AVAILABLE		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
	INSOLUBLE		NOT PERTINENT		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE