

MERRAND INTERNATIONAL CORPORATION

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Date: Jan.22, 2010
Replaces: Oct. 6, 2005

MATERIAL SAFETY DATA SHEET

SECTION I CHEMICAL and COMPANY IDENTIFICATION

PRODUCT: *MERROX[®] TBEP*
CHEMICAL NAME: *Ethanol, 2-butoxy, phosphate*
COMMON/GENERIC NAME: TBEP, Tributoxyethyl phosphate
CHEMICAL FAMILY: Alkyl Phosphate
MANUFACTURER: MERRAND INTERNATIONAL CORP. - Customer Service 603-279-5216
EMERGENCY NUMBERS: CHEMTREC 800-424-9300
CANUTEC(Canada) 613-996-6666

SECTION II COMPOSITION / INGREDIENT INFORMATION

	<u>CAS #</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
COMPOSITION: Ethanol, 2-butoxy-, phosphate: 95-98%	78-51-3	ND	ND
Tributyl phosphate: <3.0%	111-76-2	2.5 mg/m ³	2.2 mg/m ³
Phosphoric acid, mixed esters: <0.1%	NA	ND	ND

SECTION III/IV HAZARDS / FIRST AID PROCEDURES

EMERGENCY OVERVIEW: A clear colorless, oily liquid, which may become irritating to eyes, skin, and mucous membranes. Ingestion and prolonged contact should be avoided.

EYE: Flush eyes with water for 15 min. Hold eyelids apart to ensure rinsing of the entire surface of the eye. Call a physician if irritation develops.

SKIN: Remove contaminated clothing and equipment. Wash skin with soap and water. If in contact with hot product, treat as a burn.

INGESTION: Do not induce vomiting. Never give anything by mouth to unconscious person. Seek medical attention immediately.

INHALATION: Inhalation of vapors, mists, or aerosols may cause respiratory tract irritation. This product may cause neurotoxicity and cholinesterase inhibition. Remove to fresh air; give artificial respiration or oxygen if necessary.

TOXICITY: Practically non-toxic by ingestion. LD50 (rat) >5000 mg/kg

CARCINOGENICITY: Not listed by NTP, IARC or OSHA

NOTE TO PHYSICIAN: Over exposure to this product by ingestion or inhalation may cause peripheral neuropathy and cholinesterase inhibition. Symptoms of peripheral neuropathy may include: diarrhea, conjunctivitis, laryngitis, thinitis, pharyngitis, distal extremity paresthesias, and cramping pain in the calves. Later symptoms may include: flaccid paralysis followed by spasticity of the lower extremities resulting in a spastic gait. Symptoms of cholinesterase inhibition may include: headache, nausea, sweating, numbness and tingling of the hands and feet, salivation, muscle twitching, tremors, incoordination, blurred vision, tears, abdominal cramps, diarrhea, and chest discomfort. In cases of cholinesterase inhibition, atropine is antidotal. Pralidoxime chloride (2-PAM; Protopam chloride) is also antidotal when administered early and in conjunction with atropine.

IN ALL CASES OF EMERGENCY, CONTACT A PHYSICIAN

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P.O.Box 858
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SECTION V FIRE AND EXPLOSION INFORMATION

FLASH POINT 132°C (269.6°F) Pensky-Martens Closed Cup

FIRE-FIGHTING PROCEDURES: Use Chemical foam, CO₂, Dry Chemical, water fog. This product is not defined as flammable or combustible. It is self-extinguishing once the source of ignition is removed.

HAZARDOUS COMBUSTION PRODUCTS: This product will decompose under extreme temperatures forming oxides of carbon, oxides of phosphorus, and phosphoric acid.

PROTECTIVE EQUIPMENT: Firefighters should wear full face self-contained breathing apparatus.

SECTION VI SPILLS AND ENVIRONMENTAL INFORMATION

SPILL OR LEAK PRECAUTIONS: Wear appropriate protective clothing, gloves and equipment. Contain spill with inert absorbent or earth. Transfer to secure containers and dispose of according to local and state regulations. Thought should always be given to collecting the material in such a manner that it could be recycled. Clean/scrub affected area with detergent. Prevent run-off into sewers or natural waterways. Spills in excess of the RQ must be reported to the local emergency response organizations. Major spills should also be reported to the National Response Center. Spills with potential to contaminate coastal waterways must be reported to the U.S. Coast Guard (800-424-8802)

WASTE DISPOSAL: All containers should be effectively labeled to facilitate the appropriate disposal or reclaim.

SECTION VII HANDLING AND STORAGE

Store in sealed containers in dry, ambient temperature conditions

SECTION VIII EXPOSURE CONTROLS AND PERSONAL PROTECTION

VENTILATION: Use only where sufficient ventilation exists to keep exposure levels of fumes and dust below recommended levels.

RESPIRATORY AND PERSONAL PROTECTION: Respirators should be selected when TWA exceeded. Avoid hot vapors when mixing or packaging. Chemical safety goggles or full face shield; gloves, boots and apron as appropriate.

FACILITIES: There should be a shower facility and eyewash in the building where this product is being stored and handled. Exercise good chemical handling practice.

SECTION IX PHYSICAL AND CHEMICAL INFORMATION

Appearance: Clear colorless liquid

Specific Gravity @25°C = 1.015

Vapor Pressure: ND

Viscosity, mPa (20°C) = 12

Evaporation Rate: < 1 (butyl acetate=1)

Boiling Point: 231°C (448°F) @ 6mm Hg

Refractive Index 25°C: Not Determined

Solubility in Water: <0.1%

SECTION X STABILITY AND REACTIVITY

Under normal storage conditions, this product a) is stable; b) will not polymerize or exotherm. It not sensitive to static discharge.

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SECTION XI TOXICOLOGICAL INFORMATION

INHALATION: Not Determined. Because of its low vapor pressure, significant amounts of airborne vapors are not expected at normal room temperatures. However, use at elevated temperatures may generate vapors or aerosols which are irritating to the respiratory tract.

INHALATION CHRONIC EXPOSURE: Chronic inhalation exposure effects for this product are not known; however, repeated inhalation of vapors or mists may cause toxicity to the peripheral nervous system.

DERMAL: Practically non-toxic. The product is a mild to moderate irritant to rabbit skin following a 24-hour exposure. The product is not a sensitizing agent based on tests on albino guinea pigs.

EYE: This product was a slight eye irritant when tested on rabbits.

INGESTION: CHRONIC: Daily oral administration of 0.25 ml/kg or 0.5 ml/kg to rats for 5 days per week for 18 weeks produced increased absolute and relative kidney weights in females at the high dose, increased absolute and relative liver weights in females at both doses, and increased relative liver weights in males at the high dose. Microscopic changes of the kidneys and liver were not observed at any doses. A significant decrease in acetylcholinesterase levels was seen in male rats at both doses. Cardiac lesions (myocardial necrosis with inflammatory cell infiltration) were seen in males at both doses. This product is reported to cause toxicity to the peripheral nervous system.

CARCINOGENICITY/MUTAGENICITY: The carcinogenic properties of this product are not known. However, data from a lifetime study in rats with tributyl phosphate (a minor product component) have shown an increased incidence of urinary bladder tumors at a very high dose level. These tumors appeared to have developed in response to long-term irritation of the bladder wall by bladder stones that formed in response to the lifetime administration of large amounts of the test article. In addition, a recent risk assessment has shown no risk to human health from occupational exposure to tributyl phosphate.

No mutagenic activity was induced in testing tributyl phosphate in the Sex-Linked Recessive Lethal Test in *Drosophila melanogaster*, nor was any genotoxic effect observed in standard tests using mammalian cells.

NEUROTOXICITY: The product when administered orally (5 g/kg) did not produce any clinical signs (ataxia) of acute delayed neurotoxicity in hens. In rats, a single oral dose (1, 3.2, 9 g/kg) resulted in significant electrophysiological changes and degenerative changes in myelinated and unmyelinated fibers of the sciatic nerve. Oral administration for 14 days (0.8, 1.12, 2.24 ml/kg) or 18 weeks (0.25, 0.5 ml/kg) produced significant changes in nerve conduction velocity and relative and absolute refractory period. Degeneration of myelin sheaths of the sciatic nerve was seen at 18 weeks.

TARGET ORGANS: Overexposure to this product may affect the skin, eyes, respiratory tract, and nervous system.

SECTION XII ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: No information available.

SECTION XIII DISPOSAL CONSIDERATIONS

Incineration by a permitted hazardous waste facility in accordance with all regulatory requirements is the preferred method of disposal. Empty containers can be rinsed with a suitable solvent/surfactant and steamed to remove residual product and fumes before disposal or reuse in accordance with applicable regulations. For spill clean-up procedures see Sect. VI.

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SECTION XIV

TRANSPORTATION INFORMATION

DOT: Not restricted. Label: Product trade name with chemical description.

CANADA TRANSPORT HAZ.GOODS: Not restricted.

AIR (IATA/ICAO): Not restricted. Label: Product trade name with chemical description.

EUROPEAN TRANSPORTATION: ADR/RID HAZ. CLASS: Not regulated.

US CUSTOMS: - HARMONIZED TARIFF CODE: 2919.00.50.10

SECTION XV

REGULATORY INFORMATION

OSHA:

SARA TITLE III: - 311/312 CATEGORIES: Not listed.

“ “ - 313 Reportable ingredients: None

CERCLA RQ: Not applicable.

RCRA Status:

TSCA REGULATORY: All intentional ingredients are listed in the TSCA Inventory.

CANADA WHMIS HAZARD SYMBOL AND CLASS: Not Regulated

CANADA INGREDIENT DISCLOSURE LIST: Does not contain any ingredients on the IDL. All intentional ingredients are on the DSL.

SECTION XVI OTHER INFORMATION

HMIS Label: Health: 1
Fire: 1
Reactivity: 0
Protection: C

Prepared: Jan. 22, 2008(PCR)

The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other or additional considerations.

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