Section 1. Product and Company Identification

Product Name Trihexylphosphine
CAS Number 4168-73-4

Parchem - fine & specialty chemicals
415 Huguenot Street
New Rochelle, NY 10801
(914) 654-6800 **(914) 654-6899**
parchem.com **info@parchem.com**

EMERGENCY RESPONSE NUMBER
CHEMTEL
Toll Free US & Canada: 1 (800) 255-3924
All other Origins: 1 (813) 248-0585
Collect Calls Accepted

Section 2. Hazards Identification

Classification of the substance or mixture
GHS Classification
Reproductive Toxicant Category 2
Acute Toxicity (Oral) Hazard Category 4
Skin Corrosion / Irritation Hazard Category 1B
Serious Eye Damage / Eye Irritation Hazard Category 1

GHS Label Elements
Pictograms:

Signal word: WARNING

Hazard and precautionary statements
Hazard Statements
Suspected of damaging fertility or the unborn child
Harmful if swallowed
Causes severe skin burns and eye damage

Precautionary Statements
Obtain special instructions before use.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not breathe dust/fume/gas/mist/vapors/spray.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
Specific treatment (see supplemental first aid instructions on this label).
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Store locked up.
Dispose of contents/container in accordance with local and national regulations.

Hazards Not Otherwise Classified (HNOC), Other Hazards: Not applicable

Section 3. Composition / Information on Ingredients

Common Name Trihexylphosphine
Synonym(s) Tri-n-Hexyl Phosphine
Formula $C_{18}H_{39}P$
CAS Number 4168-73-4

COMPONENT	CAS NUMBER	CONCENTRATION
Tri-n-Hexyl Phosphine	4168-73-4	96 – 97%
Toluene	108-88-3	0.2 – 0.5%

Section 4. First Aid Measures

Description of First-Aid Measures
Eye Contact: Rinse immediately with plenty of water for at least 15 minutes. Obtain medical attention immediately.
Skin Contact: Take off immediately all contaminated clothing. Wear impermeable gloves. Wash immediately with plenty of water and soap. Pay particular attention to skin crevices, nail folds, etc. Do not reuse contaminated clothing without laundering. Do not reuse contaminated leatherware.
Ingestion: If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. Apply artificial respiration if patient is not breathing. Obtain medical attention immediately.

Most Important Symptoms and Effects, Both Acute and Delayed: None known
Indication of any Immediate Medical Attention and Special Treatment Needs: Not applicable

Section 5. Firefighting Measures

Suitable Extinguishing Media: The most effective fire extinguishing agent is AFFF Foam. Use dry chemical powder pressurized with nitrogen. Use sand or carbon dioxide as an alternative extinguishing media, however, re-ignition of material is likely.

Extinguishing Media to Avoid: Full water jet
Protective Equipment: Use approved air-supplied full face respirator.
Special Hazards: Immediate action should be taken to confine the fire. If fire cannot be controlled with extinguishing agent, keep a safe distance, protect adjacent property and allow the product to burn until consumed. Human exposure should be prevented and nonessential personnel evacuated from the immediate area. Breathing vapors from this material or its combustion products should be avoided by using proper respiratory equipment.

Section 6. Accidental Release Measures

Personal precautions: Where exposure level is known, wear approved respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.
Methods for Cleaning Up: Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.
References to other sections: See Sections 8 and 13 for additional information.

Section 7. Handling and Storage

Handling
Precautions: Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Do not breathe vapors or spray mist.
Special Handling Statements: Exposure to air and other oxidizing material must be avoided. This material is a strong reducing agent. May react with combustible substances creating fire or explosion hazard.

Storage
Keep contents under an inert atmosphere.
Storage Temperature: Room temperature
Reason: Quality

Section 8. Exposure Controls / Personal Protection

Engineering Measures: Utilize a closed system process where feasible. Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.
Respiratory Protection: Full face piece respirators provide additional eye protection where handling makes it desirable. A full face piece respirator also provides eye and face protection.
Eye Protection: Eyewash equipment and safety shower should be provided in areas of potential exposure.
Skin Protection: Wear the following to prevent skin contact: impervious rubber or plastic gloves, rubber shoes and long-sleeved coveralls which are provided clean daily.

Hand Protection: Wear impermeable gloves. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility etc.) is noticed. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.
Additional Advice: Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. It is recommended that a shower be taken after completion of work shift especially if significant contact has occurred. Work clothing should then be laundered prior to reuse. Street clothing should be stored separately from work clothing and protective equipment. Work clothing and shoes should not be taken home.

Exposure Limits: The below constituents are the only constituents of the product which have a PEL, TLV, or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

OSHA (PEL): 200 ppm (TWA); 300 ppm (Ceiling)
ACGIH (TLV): 20 ppm (TWA)
Other Value: Not established

Section 9. Physical and Chemical Properties

Color: White to pale yellow
Appearance: Liquid
Odor: Garlic
Boiling Point: Not available
Melting Point: Not applicable
Vapor Pressure: Not available
Specific Gravity/Density: Not available
Vapor Density: Not applicable
Percent Volatile (% by wt.): 100
pH: Not applicable
Saturation in Air (% By Vol.): Not applicable
Evaporation Rate: Not applicable
Solubility in Water: Insoluble
Volatile Organic Content: Not applicable
Flash Point (Pensky-Martens Closed Cup): > 260°C/500°F
Flammability (solid, gas): Not available
Flammable Limits (% By Vol): Not applicable
Auto-ignition (Self) Temperature: 245°C/473°F
Decomposition Temperature: 290°C/554°F
Partition coefficient (n-Octanol/water): Not available
Odor Threshold: Not available
Viscosity (Kinematic): Not applicable

Dust Hazard Information
Particle Size (microns): Not applicable
Kst (bar-m/sec): Not applicable
Maximum Explosion Pressure (Pmax): Not applicable
Dust Class: Not applicable
Minimum Ignition Energy (MIE): Not applicable
Minimum Ignition Temperature (MIT): Not applicable
Minimum Explosive Concentration (MEC): Not applicable
Limiting Oxygen Concentration (LOC): Not applicable

Section 10. Stability and Reactivity

Stability: Stable
Conditions To Avoid: None known
Polymerization: Will not occur
Conditions To Avoid: None known
Materials To Avoid: Strong oxidizing agents.
Hazardous Decomposition Products: Oxides of carbon; Oxides of phosphorus

Section 11. Toxicological Information

Product Toxicity Information
Likely Routes of Exposure: Oral, Eyes, Skin.

Acute Toxicity Data

Oral	Rat	Acute LD50	> 750 mg/kg
Dermal	Rabbit	Acute LD50	> 2000 mg/kg
Inhalation	Rat	Acute LC50, 4hrs	No data

Local Effects on Skin and Eye

Acute Irritation	Skin	Corrosive
Acute irritation	Eye	Irritating

Allergic Sensitization

SensitizationSkinNot sensitizing		
Sensitization	Respiratory	No data

Genotoxicity
Assays for Gene Mutations
Ames Salmonella Assay: No data available

Other Information: The product toxicity information above has been estimated.

Hazardous Ingredient Toxicity Data
The toxicological properties of trihexylphosphine have not been fully investigated. The estimated acute oral (rat) and dermal (rabbit) LD50 values are >750 mg/kg and >2000 mg/kg, based on data for a similar alkylphosphine. Direct contact with this material may cause moderate eye irritation and may be corrosive to the skin.

Toluene has acute oral (rat) and dermal (rabbit) LD50 values of 4,328 mg/kg and 12124 mg/kg, respectively. The acute 4-hour inhalation (rat, female) LC50 value is 5,060 ppm (19.07 mg/L). Toluene is a severe eye and moderate skin irritant. Inhalation overexposure to toluene vapor can cause headache, fatigue, nausea, and central nervous system depression. Sustained inhalation of high levels of toluene has been shown to cause reversible kidney and liver damage. Subchronic inhalation of toluene vapors have caused permanent hearing loss, decreased learning capabilities and damage to the eyes in laboratory animal tests. Deliberate inhalation of high concentrations of toluene vapor by pregnant women has been shown to adversely affect the fetus. These fetotoxic effects include intrauterine growth retardation and delayed postnatal development. The fetotoxic effects of toluene seen in laboratory animals are similar to those seen in humans. Ingestion of toluene in laboratory animals caused mild gastritis and harmful effects on the respiratory system, kidneys, liver and heart. Ingestion in laboratory animals also caused harmful effects on the central nervous system and death. It has also been reported that subchronic ingestion of toluene caused brain and bladder damage in laboratory animals. Due to synergistic effects, the toxicity of toluene may be enhanced by exposure to n-hexane, benzene, xylene, acetylsalicylic acid and chlorinated hydrocarbons. The literature reports that toluene is an aspiration hazard, that acute oral exposure resulted in reversible visual dysfunction, and that chronic exposure has caused altered immune function in animals. Toluene is a chemical known to the State of California to cause reproductive toxicity.

California Proposition 65 Warning (applicable in California only) - This product contains (a) chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Section 12. Ecological Information

Toxicity, Persistence, and Degradability, Bioaccumulative Potential, Mobility in Soil, Other Adverse Effects:
Due to extreme low solubility in water, and therefore the non-availability to species, this product is regarded as not hazardous to aquatic organisms. The product is also predicted to be readily biodegradable.

Results of PBT and vPvB Assessment: Not determined

Hazardous Ingredient Toxicity Data

Component / CAS No.	Toxicity to Algae	Toxicity to Fish	Toxicity to Water Flea
Tri-n-hexyl phosphine (CAS# 4168-73-4)	Not available	Not available	Not available

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT
Dangerous Goods? X
Proper Shipping Name: Corrosive Liquid, N.O.S.
Hazard Class: 8
Packing Group: II
UN/ID Number: UN1760
Transport Label Required: Corrosive
Technical Name (N.O.S.): Contains Trihexylphosphine

Transport Canada
Dangerous Goods? X
Proper Shipping Name: Corrosive Liquid, N.O.S.
Hazard Class: 8
Packing Group: II
UN Number: UN1760
Transport Label Required: Corrosive
Technical Name (N.O.S.): Contains Trihexylphosphine

ICAO/IATA
Dangerous Goods? X
Proper Shipping Name: Corrosive Liquid, N.O.S.
Hazard Class: 8
Packing Group: II
UN Number: UN1760
Transport Label Required: Corrosive
Technical Name (N.O.S.): Contains Trihexylphosphine

IMO
Dangerous Goods? X
Proper Shipping Name: Corrosive Liquid, N.O.S.
Hazard Class: 8
UN Number: UN1760
Packing Group: II

Transport Label Required: Corrosive
Technical Name (N.O.S.): Contains Trihexylphosphine

Section 15. Regulatory Information

Inventory Information
United States (USA): One or more components of this product are NOT included on the U.S. Toxic Substances Control Act (TSCA) Inventory. The chemical, physical, and toxicological properties of this material have not been fully investigated. Its handling or use may be hazardous, and it must be used under the supervision of technically qualified individuals. Materials not included on the TSCA Inventory may only be used for research and development (R&D) purposes or in other TSCA exempt activities.
Canada: One or more components of this product are NOT included on the Canadian Domestic Substances List (DSL).
Australia: One or more components of this product have NOT yet been included in the Australian Inventory of Chemical Substances (AICS) or assessed by NICNAS.
China: One or more components of this product are NOT included on the Chinese (IECSC) inventory.
Japan: One or more components of this product are NOT included on the Japanese (ENCS) inventory.
Korea: One or more components of this product are NOT included on the Korean (ECL) inventory.
Philippines: One or more components of this product are NOT included on the Philippine (PICCS) inventory.

Other Environmental Information
The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.
This product does not contain any components regulated under these sections of the EPA

Product Hazard Classification under Section 311 of SARA
- Acute
- Chronic

NFPA Rating
Health: 3
Flammability: 2
Reactivity: 1

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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