

Cyren[®] TC

Product No.: 71E/7142

Product Name: Cyren[®] TC

Active Ingredient: Chlorpyrifos

EPA Registration #: 67760-10

KEM/September 1999

Supersedes issue marked MVF/December 1996

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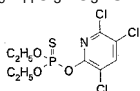
1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKINGProduct Name: CYREN[®] TC

Supplier: CHEMINOVA INC.

1700 Route 23

Wayne, NJ 07470

Emergency Telephone No. - see 16: Other Information (last page)

2. COMPOSITION/INFORMATION ON INGREDIENTS**2.1. ACTIVE INGREDIENT:****CAS Name:** Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester**Chemical Name:** O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate**ISO Name:** Chlorpyrifos**CAS No.:** 2921-88-2**EC No. (EINECS No.):** 220-864-4**Index No.:** 015-084-00-4**Molecular Weight:** 350.56**Empirical Formula:** C₉H₁₁Cl₃NO₃PS**Structural Formula:****2.2. Typical Content:****Chlorpyrifos Technical:** 44-45 % by weight**Aromatic hydrocarbon solvent (CAS No 70693-06-0), emulsifiers:** 55-56 % by weight**2.3. Material Use:** Insecticide**2.4. CLASSIFICATION:****EU Classification of the Product:** Xn;R20/22 N;R50/53**WHO Classification:** Class II: Moderately Hazardous**USA Classification:** Toxicity Category II, Signal Word: Warning**Canada - WHMIS Ratings:**

Health: 2

Flammability: 2

Reactivity: 1

Personal Protection: See 8.1

3. HAZARDS IDENTIFICATIONIn this section the health hazards are described for **Chlorpyrifos** which is the most toxic component in the product.**3.1. Health Hazards (Acute and Chronic):****Chlorpyrifos** is a cholinesterase inhibitor. It rapidly enters the body on contact with all skin surfaces and eyes. Clothing contaminated with material must be removed immediately and all skin washed thoroughly. Exposed persons must receive prompt medical treatment.Repeated exposures to cholinesterase inhibitors such as **Chlorpyrifos** may, without warning, cause increased susceptibility to doses of any cholinesterase inhibitor.**3.2. Signs and Symptoms of Exposure:** Headache, nausea, vomiting, cramps, weakness, blurred vision, pin-point pupils, tightness in chest, labored breathing, nervousness, sweating, watering of eyes, drooling or frothing of mouth and nose, muscle spasms and coma.**3.3. Environmental Hazards:** See 12.**4. FIRST AID MEASURES****4.1. Emergency and First Aid Procedures:**Call a doctor (physician), clinic or hospital immediately. Explain that the victim has been exposed to **Chlorpyrifos**, an organophosphorus insecticide, and describe his/her condition. Move victim immediately from the area where the product is present. If breathing has stopped, start artificial respiration immediately and maintain until physician takes charge of the exposed person.**If swallowed:** Do not induce vomiting. In this case vomiting may be contraindicated. Never give anything by mouth to an unconscious person. Make the exposed person lie down and keep him/her steady. Get medical attention immediately.**If in eyes or skin:** Immediately flush eyes with plenty of water. Immediately wash skin with plenty of soap and water while removing contaminated clothing and shoes. See physician immediately.**4.2. Note to Physician:****Chlorpyrifos** is a cholinesterase inhibitor affecting the central and peripheral nervous systems producing cardiac and respiratory depression. The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. May pose aspiration pneumonia hazard.**Cholinesterase Inhibition - Treatment****Antidote:** Administer atropine sulfate in large doses. TWO to FOUR mg intravenously or intramuscularly as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinisation appear.

2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for atropine, which is a symptomatic and often lifesaving antidote. DO NOT GIVE MORPHINE OR TRANQUILLIZERS.

At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically.

Continued absorption of **Chlorpyrifos** may occur and relapse may occur after initial improvement. VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.**5. FIRE-FIGHTING MEASURES****5.1. Extinguishing Media and Procedure:**

Dry chemical or carbon dioxide for small fires, water spray or foam for large fires.

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Avoid heavy hose streams. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

5.2. Hazardous Decomposition or Byproducts in a Fire: The essential breakdown products are: hydrogen chloride, ethyl mercaptan, diethyl sulfide, sulfur dioxide, nitrogen oxides and various chlorinated organic compounds.**5.3. Unusual Fire and Explosion Hazards:** See 10.1.**6. ACCIDENTAL RELEASE MEASURES****6.1. Personal Protection:** Observe all protection and safety precautions when cleaning up spills, see 8.**6.2. Steps to Be Taken in Case of Spill:****Small liquid spills** on the floor or other impervious surface should be swept up by means of an inert absorptive material such as hydrated lime, sawdust, Fuller's earth or other absorbent clays. Scoop into proper containers and dispose of in accordance with the instructions provided under Disposal (see 13). Rinse area with soda lye.**Large liquid spills** on the floor or other impervious surface should be contained or diked and then absorbed with an inert absorptive material such as hydrated lime, sawdust, Fuller's earth or other absorbent clays. Collect the contaminated absorbent, place in a metal drum and dispose of in accordance with the instructions provided under Disposal (see 13). Rinse area with soda lye.

Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under Disposal (see 13).

Chlorpyrifos can be hydrolysed in water by heating and adjusting the pH (alkaline). The product may also be disposed of through proper incineration.**7. HANDLING AND STORAGE****7.1. Precautions to Be Taken in Handling:** See Personal Protection, Section 8.**7.2. Precautions to Be Taken in Storing:**

Avoid storage above 122°F (50°C) for extreme periods of time. Storage below 55°F (-13°C) may result in formation of crystals.

The product should never be heated above 131°F (55°C) and also local heating above this temperature should be avoided. Protect against strong heat from sunshine or other source, e.g. fire.

7.3. Fire and Explosion Precautions: —**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1. Respiratory Protection:** In case of insufficient ventilation wear a respirator approved by the local authorities.**Protective Gloves:** Wear chemical resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton.**Eye Protection:** Wear safety glasses.**Other Protection:** Wear water-proof pants, coat, hat, rubber boots or rubber overshoes.**8.2. Work/Hygenic Practices:**

If handled indoors, provide mechanical exhaust ventilation.

Persons working with this product for a longer period should have frequent blood tests of their cholinesterase levels. If the cholinesterase level falls below a critical point, no further exposure should be allowed until it has been determined by means of blood tests that the cholinesterase level has returned to normal. Keep all unprotected persons and children away from working area.

Before removing gloves wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking.

After work, take off all work clothes and shoes. Shower, using soap and water. Wear only clean clothes when leaving job. Do not wear contaminated clothing. Wash protective clothing and protective equipment with soap and water after each use. Respirator should be cleaned and filter replaced according to instructions included with respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1. Physical State:** Liquid**9.2. Colour:** Pale yellowish to brownish**9.3. Odour:** Slightly aromatic**9.4. Melting Point:** Below 0°C**9.5. Boiling Point:** Decomposes**9.6. Specific Gravity:** 1.110 g/ml at 20°C**9.7. Vapour Pressure:****Chlorpyrifos:** 1.87 x 10⁻⁵ mm Hg at 25°C8.15 x 10⁻⁵ mm Hg at 35°C**9.8. Viscosity:** —**9.9. Solubility in Water:** The product is emulsifiable in water.

- 9.10. **Solubility in Organic Solvents:** —
 9.11. **Partition Coefficient n-Octanol/Water:** $K_{ow} = 9100$. $\log K_{ow} = 4.700$ (Chlorpyrifos)
 9.12. **pH:** —
 9.13. **Flash Point:** 74°C (165.2°F) (Pensky-Martens closed tester)
 9.14. **Autoignition Temperature:** —
 9.15. **Flammable Limits:** —

10. STABILITY AND REACTIVITY

10.1. Thermal Decomposition:

The product (Chlorpyrifos) will decompose rapidly when heated to temperatures above 160°C, significantly increasing the risk of inducing explosion.

The decomposition is dependent on time as well as temperature due to exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerization releasing volatile malodorous and inflammable compounds such as diethyl sulfide.

10.2. Hazardous Decomposition or Byproducts:

See 5.2.
 10.3. **Materials to Avoid:** Strong alkalis, amines and strong oxidizing compounds. The product is corrosive to iron, steel, tin plate and copper.

11. TOXICOLOGICAL INFORMATION

*Data derived from formulated product

**Data derived from technical active ingredient

11.1. Health Hazards:

See 3.1.

11.2. Route(s) of Entry*:

- Ingestion LD₅₀, oral, rat: 205 mg/kg
- Skin LD₅₀, dermal, rat: >4000 mg/kg
- Inhalation LC₅₀, inhalation, rat: 2.16 mg/l/4 h

11.3. Irritancy of Material*:

Moderately irritating to rabbit skin. Irritating to eyes.

11.4. Allergic Sensitization*:

No sensitizing reaction in guinea pigs.

11.5. Carcinogenicity**:

Chlorpyrifos did not cause cancer in long-term animal studies.

11.6. Reproductive Effects**:

Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

11.7. Teratogenicity**:

Chlorpyrifos did not cause birth defects in laboratory animals.

11.8. Mutagenicity**:

Chlorpyrifos produced no mutagenic effects during *in vivo* and *in vitro* assays.

12. ECOLOGICAL INFORMATION

The active ingredient Chlorpyrifos is readily biodegradable. It undergoes rapid degradation in the environment and in waste water treatment plants. No adverse effects are found at concentrations up to 100 mg/l in waste water treatment plants. Degradation occurs both aerobically and anaerobically, biologically as well as abiotically.

In the environment Chlorpyrifos is not mobile, but is strongly absorbed to soil.

The product is highly toxic to fish and wildlife. See label for precautions. The acute toxicity is:

- Fish	96 h-LC ₅₀ , Rainbow trout (<i>Salmo gairdneri</i>):	48 µg/l
- Invertebrates	48 h-EC ₅₀ , Daphnids (<i>Daphnia magna</i>):	2.6 µg/l
- Birds LD ₅₀ ,	Bobwhite quail (<i>Colinus virginianus</i>):	83 mg/kg
	8-day dietary LC ₅₀ , Bobwhite quail (<i>Colinus virginianus</i>):	423 ppm (Chlorpyrifos)
	8-day dietary LC ₅₀ , Mallard Duck (<i>Anas platyrhynchos</i>):	591 ppm (Chlorpyrifos)

13. DISPOSAL CONSIDERATIONS

13.1. Waste Disposal Method:

Spill and waste disposal procedures in conformity with state and local regulations must be followed.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

13.2. Container Disposal:

Non-Refillable Containers: Triple rinse (or equivalent) then offer for recycling or reconditioning, or puncture and/or crush rinsed, empty container and dispose

of in a sanitary landfill, or by other procedures approved by state and local authorities.

Returnable / Refillable Containers: Do not break open any seals or cables! Pump out all possible product. Replace the dust cap in the one-way valve. Do not rinse the container. Return the empty container to a collection site designated by Cheminova or your distributor. If the drum has been damaged or the seals broken, please contact Cheminova at 1-800-548-6113 for instructions. However, procedures in conformity with state and local regulations must be followed.

14. TRANSPORT INFORMATION (US)

UN CLASSIFICATION:

Proper Shipping Name: Organophosphorus Pesticides, Liquid, Toxic, (Chlorpyrifos)

No.: 3018

Class: 6.1

Packaging Group: III

Primary Hazard: Toxic

Subsidiary Risk: —

Marine Pollutant (P/PP) (IMDG-Code): Marine Pollutant

US CFR: RQ (1 lb.)

15. REGULATORY INFORMATION

15.2. Threshold Limit Value:

	OSHA (USA) PEL-TWA	ACGIH (USA) TLV-TWA	United Kingdom	HGV (Denmark)	Australia
Chlorpyrifos	0.2 mg/m ³ skin	0.2 mg/m ³ skin	0.2 mg/m ³	0.2 mg/m ³	0.2 mg/m ³

However, threshold limit values defined by local regulations must be observed.

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and the MSDS contains all of the information required by the CPR.

16. OTHER INFORMATION

This material should only be used by persons who have been instructed in all safety precautions required and otherwise are familiar with the content of this data sheet.

IN THE USA:

Emergency Medical Telephone Number: 1-800-228-5635, Ext. #153

Other Emergencies: CHEMTREC toll free 1-800-424-9300

Telephone Number for Information: (973) 305-6600
 Material Safety Data Sheet according to 91/155/EEC, 93/112/EEC and OSHA, 29 CFR 1910.1200 (g).

The information presented herein is believed to be accurate and reliable, but is presented without guarantee or responsibility on the part of Cheminova, Inc.