



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Ms. H. Marla Biss
Cheminova, Inc.
Oak Hill Park
1700 Route 23, Suite 210
Wayne, N.J. 07470

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

OCT 28 1998

Subject: Cyren 4E
EPA File 67760-7
Submission Dated Jun 12, 1997

Dear Ms. Biss:

The Agency has reviewed your FAX submissions dated Oct 1, 1998 and Oct 13, 1998. The Agency has reviewed the Confidential Statement of Formula (CSF), dated June 19, 1997; however, we cannot proceed with registering the change in the basic formulation for the reasons outlined in the confidential appendix. The Agency has reviewed and accepts with comments the FAXed label dated Oct 1, 1998. The revised basic formulation is not acceptable, and therefore the active ingredient percentages must remain as on previously approved labels, i.e., 44.6% for chlorpyrifos and 55.4% for the remaining inerts.

Submit one copy of the revised printed label before releasing the product for shipment. Your release of the product for shipment constitutes acceptance of these condition. If you have questions, please contact me at (703) 305-5404 or electronically at McNeilly.Dennis@EPAMail.EPA.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Dennis McNeilly".

Dennis McNeilly
Chemist
Insecticide-Rodenticide Branch
Registration Division (7505C)

Label Submitted with Spill 12, 1997
Approved

1

CYREN 4E

2/22

**Controls Numerous Pests of Households, Turf and Ornamental Plants.
Also recommended for Area Control of Ticks and Chiggers**

Active Ingredient:

Chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro-2-pyridiny) phosphorothioate 44.7%

Inert Ingredients 55.3%

Total 100.0%

This product contains 4 pounds of Chlorpyrifos per gallon. Contains aromatic petroleum distillates

KEEP OUT OF REACH OF CHILDREN

WARNING - AVISO

AL USUARIO: Si Usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle
(TO THE USER: If you do not understand the label, find someone to explain it to you in detail)

May be fatal if swallowed • Causes substantial but temporary eye injury • Causes skin irritation • Harmful if absorbed through skin • Do not get in eyes, on skin, or on clothing

See Additional Precautionary Statements inside

IN CASE OF MEDICAL EMERGENCY, CALL TOLL FREE, DAY OR NIGHT, AREA 1-800-228-6636, ext. 153

EPA Reg. No. 67760-7

Specialty Insecticide

EPA Est. No

Manufactured By
CHEMINOVA, INC.
1700 Route 23, Suite 210
Wayne, NJ 07470

**ACCEPTED
with COMMENTS
In EPA Letter Dated:
OCT 28 1998**
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under EPA Reg. No.
67760-7

1 67760-7
9/11/97(Maria)

(MVF-corrections according to toxicity measured for Nufos 4E-SG™ 0) included. MVF corrections according to EPA Label Review Manual, 2nd Edition included. Review date: 9/25/97

3/22

FIRST AID

Organophosphorus pesticide

In case of poisoning, call a physician or Poison Control Center immediately. Have person lie down and keep quiet.

If swallowed: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger (be aware that product contains aromatic petroleum distillates). If person is unconscious, do not give anything by mouth and do not induce vomiting.

If on skin: Wash with plenty of soap and water. Get medical attention.

If in eyes: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

If inhaled: Remove to fresh air if symptoms of cholinesterase inhibition appear. If not breathing, give artificial respiration. Get medical attention.

Note to physician: Chlorpyrifos is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing cardiac and respiratory depression. **Antidote:** Administer atropine sulphate 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 atropinization 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.**

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING

May be fatal if swallowed • Causes substantial but temporary eye injury • Causes skin irritation • Harmful if absorbed through skin • Do not get in eyes, on skin, or on clothing

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category G on an EPA chemical resistance category selection chart.

Applicators and other handlers, including applicators who submerge containerized or balled/burlapped plants in tanks, must wear:

1. Coveralls worn over short sleeved shirt and short pants
2. Socks
3. Chemical resistant footwear
4. Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton
5. Protective eyewear (goggles, face shield or safety glasses)
6. Chemical-resistant apron when mixing and loading, dipping balled plants, and cleaning equipment

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

1. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is extremely toxic to birds, fish and other wildlife. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Cover or incorporate spills. Do not contaminate water when cleaning equipment or disposing of equipment washwater.

5/22

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

CHEMIGATION PROHIBITION

Do not apply this product through any type of irrigation system.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contacts with anything that has been treated such as plants, soil, or water, is:

1. Coveralls worn over short sleeved shirt and short pants
2. Socks
3. Chemical resistant footwear
4. Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton
5. Protective eyewear (goggles, face shield or safety glasses)

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides [40 CFR Part 170]. The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep children, pets and other unprotected persons out of treated area until sprays have dried.

6/22

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Storage: Store in original container in secured dry storage area. Protect against strong heat from sunshine or other source. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 100°F for extended periods of time. Storage below 20°F may result in formation of crystals. If product crystallizes, store at 50 to 70°F and agitate to redissolve crystals. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal (CONTAINERS LESS THAN 1 GALLON): Securely wrap original container in several layers of newspaper and discard in trash.

Container Disposal (METAL DRUM): Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Container Disposal (PLASTIC): Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Container Disposal (RETURNABLE / REFILLABLE CONTAINERS): Do not break or 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.

Table of Contents:

Pest Control Indoors	6
Turf and Outdoor Areas	9
Pest control on Outside Surfaces and Around Buildings	11
Ornamentals (Soil treatment)	12
Ornamentals (Outdoor and Nursery)	13
Tree and Forest Pests (Nurseries, Plantations, and Felled Trees)	17
Dormant Spray (Tree and Forest Pests)	20
Warranty Limitations and Disclaimer	21

PESTS INDOORS

7/22
6**General Information:**

To prepare the spray, dilute **Cyren 4E** with water or with a suitable base oil* as indicated in the Spray Dilution Chart.

*Use only deodorized kerosene for oil-based sprays to be applied in food handling establishments.

NOTE: Where quick "knockdown" and/or "flushing action" is desired, dichlorvos (DDVP) or pyrethrins may be added to the spray mixture containing **Cyren 4E**. For best results, use dichlorvos at a concentration of 0.25% in both water and oil-based sprays. Consult labeling for the dichlorvos or pyrethrin products used to determine the amount needed to give the desired spray concentration. Also read and observe all use and handling precautions for these products.

Do not use **Cyren 4E** in combination with dichlorvos (DDVP) or pyrethrins for treatment of food areas in food handling establishments.

ATTENTION:

- Do not apply water-based sprays of this product in conduits, motor housings, junction and switch boxes or other electrical equipment because of possible shock hazard. If there is need to treat such areas use only oil-base sprays. Prior to application de-energize electrical equipment. After application allow time for oil to evaporate before starting motors or placing switches in the "ON" position.
- Do not use in poultry houses or other animal buildings.
- Remove pets and cover fish bowls (tanks) before spraying.
- Do not allow spray to contact food, feedstuffs, and water supplies. Thoroughly wash dishes and food handling utensils with soap and water if they become contaminated by application of this product.

FOOD HANDLING ESTABLISHMENTS

Including, but not limited to restaurants, grocery stores, bakeries, bottling plants, canneries and grain mills.

Applications of this product in food handling establishments other than as a spot and/or crack and crevice treatment are not permitted.

- Use only as a spot treatment in and around both food and nonfood areas.
- Equipment capable of delivering a pinstream of insecticide should be used.
- Apply small amounts of material directly into cracks, crevices and openings leading to voids and hollow spaces in walls, equipment legs and bases or which occur at points between different elements of construction or between equipment and floors.
- Also treat dark corners of rooms and closets; along and behind baseboards; beneath and behind stoves, refrigeration units and similar food preparation areas and equipment; floor drains; around plumbing and other utility installations.

8/22

- Apply as a coarse, low pressure (20 psi or less) spray to localized areas where pests have been seen or are suspected of hiding or entering.
- Apply only enough spray to thoroughly cover the surfaces treated using special care to avoid unnecessary runoff.
- Do not introduce the spray into the air or allow the spray to contact food or food-contacting surfaces.
- Repeat treatment as needed but not more than once every 7 days in restaurants and similar food service establishments or more often than once every 14 days in other types of food handling establishments.
- In case of emergency (call back), *Cyran 4E* may be applied after 2 days from last treatment but emergency use should be limited to once per month.

RESIDENTIAL BUILDINGS

Including Homes and Apartment Buildings and Within Nonfood Areas of Industrial, Institutional, and Commercial Buildings including Hospitals, Stores, Manufacturing Plants and Warehouses:

For Spot Treatment Only - Apply as a coarse spray or with a paint brush to localized areas where insects are found such as dark corners of rooms and closets; cracks and crevices in walls; along and behind baseboards; beneath and behind sinks, stoves, refrigerators and cabinets; around plumbing and other utility installations.

SPRAY DILUTION CHART-INDOORS

9/22

Pests	Gal Spray	CYREN 4E Fluid Ounces* (ml)				Comments
		Water		Oil**		
		0.25 %	0.5%	0.25 %	0.5%	
Ants (1) Brown Dog Ticks (3) Carpet Beetles (4) Clover Mites(5) Cockroaches (2) (American, Brown Banded, German, Oriental, Smokey Brown) Confused Flour Beetles Crickets Earwigs Firebrats Indian Meal Moths Mediterranean Flour Moths Millipedes Red Flour Beetles Rice Weevils Saw-toothed Grain Beetles Silverfish Spiders	1 3 5 10	$\frac{2}{3}$ (20) 2 (60) 3 $\frac{1}{3}$ (100) 6 $\frac{2}{3}$ (200)	1 $\frac{1}{3}$ (40) 4 (120) 6 $\frac{2}{3}$ (200) 13 $\frac{1}{3}$ (400)	$\frac{1}{2}$ (15) 1 $\frac{1}{2}$ (45) 2 $\frac{1}{2}$ (75) 5 (150)	1 (30) 3 (30) 5 (*50) 10 (300)	Use 0.25% spray to control light infestations. Use 0.5% to quickly reduce heavy infestations or for extended residual control. (1) - Apply to ant trails, around doors, windows and wherever else these pests may find entrance (2) A period of 4 to 7 days is normally required for maximum effect on cockroaches (3) Use a 0.5% spray only. Thoroughly apply as a spot treatment to infested areas such as pet beds and resting quarters, nearby cracks and crevices, along and behind baseboards, window and door frames and localized areas of floor and floor covering where these pests may be present. Old bedding should be removed and replaced with clean fresh bedding after treatment. DO NOT TREAT PETS WITH THIS PRODUCT. (4) Use a 0.5% spray only. Thoroughly apply as a spot treatment along baseboards and edges of carpeting, under carpeting, rugs and furniture, in closets and on shelving, and wherever else these insects are seen or suspected (5) Use a 0.5% spray only.

*NOTE: 1 fluid ounce = 2 tablespoons = 6 teaspoonfuls

** Calculated on basis of deodorized kerosene Approx. Wt. 6.68 lbs. / gal.

10/22

Turf and Outdoor Areas

Dilute Cyren 4E in water as directed below, and apply as a coarse, low-pressure spray using suitable application equipment. Thoroughly water immediately after treatment to wash the insecticide into the turf, except as noted. For best results, the lawn should be moist at time of treatment. Spray when pests first appear; re-treat when needed.

Pest	Amount of Cyren 4E in water to make		Specific Directions
	1 gal.	100 gals.	
Ticks (Such as American dog, Cattle fever, Gulf coast, Lone star) (1)	1/4 fl. oz	1 1/2 pt.	1. For control of ticks infesting corrals, stockyards, holding pens and other outdoor livestock areas. Treat soil in corrals and pens, especially in corners, under and around fences, grassy areas, protected areas under feeders and shelters and other areas likely to serve as harborage sites for ticks that have removed themselves from their host. Spray surfaces to be treated until wet, but do not create excessive runoff. NOTE: This application is intended as a premise spray only. Do not use as a direct spray on livestock. Take care to avoid creating mist or drift which may come into contact with feed, water or livestock. Livestock should not be allowed in treated areas until spray deposits have dried.
PEST	Amount of Cyren 4E per		SPECIFIC DIRECTIONS
	1000 sq. feet	acre	

11/22

<p>Ants (including foraging fire ants) Armyworms (Such as: Beet, Fall, Yellowstriped) Centipedes Chiggers (1) Chinch bugs Clover weevils Cutworms Crickets Earwigs Flary Skipper Fire ants (mounds) (2) Flies Gnats Grasshoppers Greenbugs June Beetles Leafhoppers Lucerne moths Millipedes Mites (Such as: Clover, Formula grass, Winter grain) Mosquitoes (3) Sod webworms (4) (lawn moths) Sowbugs Springtails Ticks (1)</p>	3/4 fl. oz.	1 qt	<p>1. Use Cyren 4E insecticide for area control of ticks and chiggers infesting non-cropland areas such as roadsides, footpaths and trails, picnic and camping sites, parks and other recreational areas where these pests are present and create a nuisance or a possible public health problem. Do not allow public use of treated areas during application or until spray has dried. Apply Cyren 4E in water at the rate of 1/2 pint per acre (equivalent to 1/2 fl. oz. per 2,700 sq. ft.) using a hydraulic sprayer, mist applicator, knapsack sprayer, or other suitable hand- or power-operated spray equipment. Treat low underbrush, grassy areas, weeds, and ground surface and debris using enough spray volume to obtain thorough coverage, usually 40 to 100 gallons per acre.</p> <p>2. For individual fire ant mounds, apply Cyren 4E as a drench, diluted at the rate of 1 fl. oz. (30 ml) per 4 gallons of water. Gently sprinkle a total of 1 gallon of the diluted emulsion over the surface of each mound using a gentle spray (such as a sprinkler can). Thoroughly wet mound and surrounding areas to a 4 ft. diameter (12 sq. ft.). For best results, apply in cool weather, 65-80°F. or in early morning or late evening hours. Treat new mounds as they appear. Pressurized sprays may disturb the ants and cause migration, reducing product effectiveness.</p> <p>3. Mosquitoes coming to rest on areas treated for control of turf pests will be killed for varying periods of time after treatment, depending on exposure of treated areas to weathering conditions.</p> <p>4. For sod webworms delay watering and mowing the treated area for 12 to 24 hours after treatment.</p>
European crane fly	1 fl. oz.	1 1/2 qt	
Turfgrass weevil (hyperodes) (1)	1 1/12 fl. oz.	2 qt.	<p>1. Spray suspected problem areas in mid-April and again in mid-May or as recommended by your Local Agricultural Extension Service specialist.</p>

12/22

White grubs (Such as: Black turgrass stem-borer, European chafer, Southern masked chafer, Japanese beetle larvae) (1)	1 1/2 - 3 fl. oz.	2 qt. to 1 gal.	1. For white grubs, spray when grubs are young and actively feeding near the soil surface, usually during late July and August or as recommended by your local Agricultural Extension Service specialist. Immediately after spraying, irrigate the treated area with 1/2 to 1 inch of water to wash the insecticide into the underlying soil.
Bluegrass Billbugs (1)	3/4 to 3 fl. oz.	1 qt. to 1 gallon	1. For bluegrass billbugs, spray early in the season when adults first appear. Re-treat as needed.

Numbers in parentheses refer to Specific Directions.

Pests on Outside Surfaces and Around Buildings

Apply **Cyren 4E** as a residual spray or with a paintbrush to outside surfaces of buildings including porches, screens, window frames, eaves, patios, garages, refuse dumps and other areas where pests congregata or have been seen. Repeat treatment as needed to maintain effectiveness.

Pest	Amount of Cyren 4E				Specific directions
	For band treatment (1)		For outside surfaces		
	1 gal.	50 gals.	1 gal.	50 gals.	
Ants Bees Carpenter ants Clever mites Cockroaches Earwig Fleas Flies Hornets Millipedes Mosquitoes Scorpions (2) Silverfish Sawbugs Spiders Ticks Wasps Yellowjackets	1/12 fl.oz	4 fl. oz	1 1/3 fl. oz.	2 qt.	1. To help prevent infestation of buildings, treat a band of soil 6 to 10 feet wide around and adjacent to buildings, also the building foundation to a height of 2 to 3 feet where pests are active and may find entrance. Use 4 fluid ounces of Cyren 4E per 50 gallons of water and apply as a coarse spray at the rate of about 10 gallons spray mixture per 1,000 sq. ft. to thoroughly and uniformly wet the band area. 2. For scorpions, treat or remove accumulations of lumber, firewood, and other materials which serve as insect harborage sites.

Numbers in parentheses refer to Specific Directions.

Ornamentals: Soil treatment

Use **Cyren 4E** insecticide to treat potted, containerized, and balled and burlapped nursery stock to control the insects in the soil attached to the roots of these plants. Completely submerge the ball of soil in a tank containing diluted **Cyren 4E** insecticide. Do not remove burlap wrap or plastic containers with drain holes prior to submerging. Keep soil sub-merged until complete saturation has occurred, normally about 30 seconds.

Note: Application should be made in a well-ventilated area.

Attention: Environmental factors significantly affect phytotoxicity. **Cyren 4E** has been tested on numerous ornamental plants without causing serious phytotoxicity. However, because of the numerous varieties grown, it is recommended that a small group of plants be treated at the recommended rate under the anticipated growing conditions and observed for phytotoxic symptoms for at least 7 days, before a large number of plants are treated.

ORNAMENTALS: SOIL TREATMENT

Pests	Amount of Cyren 4E in water to make :		Specific directions
	1 gal.	100 gal.	
Fire ants (1)	1/4 fl. oz.	1 1/2 pt.	1. An alternate treatment to submerging potted plants is to dilute 4 oz. of Cyren 4E insecticide in 100 gals. of water. This dilution should be applied to the point of runoff on a twice-daily schedule for three consecutive days. Do not remove burlap wrap or container from plants prior to treatment.
Grubs Weevils	2/3 fl. oz.	2 qt.	

Numbers in parentheses refer to Specific Directions.

Ornamentals : Outdoor and Nursery

Use *Cyren 4E* insecticide to treat flowers, shrubs, evergreens, vines, shade and flowering trees found to be infested with pests listed in the following table. Dilute *Cyren 4E* with water according to directions given in the table and apply using suitable hand- or power-operated spray equipment in a manner to provide complete and uniform coverage. For best results, apply a coarse spray to thoroughly wet both upper and lower leaf surfaces and infested limb and trunk areas. Attempt to penetrate dense foliage, but avoid overspraying to the point of excessive runoff. Treat when pests appear and repeat at 7 to 10 day intervals, if needed.

Consult your State Agricultural Experiment Station or Extension Service specialist for application timing and other specific use information.

NOTE: Environmental factors have significant effects on phytotoxic expression. *Cyren 4E* has been tested on numerous ornamental plants without causing serious phytotoxicity. However, do not use on azaleas, camellias, poinsettias, rose bushes, or variegated ivy because of possible injury to these plants.

KEEP OUT OF GARDEN FISHPOOLS AND OTHER BODIES OF WATER.

15/22

ORNAMENTALS - OUTDOOR AND NURSERY

Pest	Amount of Cyren 4E in water to make			Specific directions
	1 gallon	3 gallons	100 Gallons	
Adelgids (Such as: Cooley and Eastern spruce galls, Pine bark) Ants (including foraging fire ants) Aphids (Such as: Apple, Chrysanthemum, Cottonwood, Elm leaf, Peach, Rose, Spirea, Woolly) Armyworms (Such as: fall, yellowstriped) Bagworms (1) Boxelder bugs Caterpillars Catappa sphinx Chiggers Citrus mealybugs Cockroaches (Such as: American, Brownbanded, German, Oriental, Smokey brown) Elm spanworms Fall Webworms Grasshoppers Green fruitworms Hornworms Jackpine budworms Juniper webworms Katydid Lace bugs Leafhoppers Leafrollers (2) Maple leafcutters (3) Mites (Such as: Clover, Red spider, Southern red) (4) Oleander Caterpillars Orange tortrix Periodical cicada Plant bugs Poplar tentmaker Psyllids Puss caterpillars Rose chafers Sawflies (Such as: Pine, Pin Oak, Redheaded) Sowbugs Spittlebugs Spring elm caterpillars Springtails Spruce budworms Tent caterpillars (Such as: Eastern, Forest, Western) Thornbug Walnut caterpillars Western spruce budworms Whiteflies Yellownecked caterpillars	1/12 fl. oz.	1/4 fl. oz	8 fl. oz	1. For bagworms, treat when insects are in the crawler stage. 2. For effective control of leafrollers, spray should be applied before leaves are tightly rolled. 3. For effective control of maple leafcutter on maple trees, apply spray to larvae as cases are being formed. Do not treat sugar maple trees intended for maple syrup production. 4. For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 to 5 days in the South or 7 to 10 days in the North after initial treatment to control newly hatched nymphs.

ORNAMENTALS - OUTDOOR AND NURSERY

16/22

Pest	Amount of Cyren 4E in water to make			Specific directions
	1 gallon	3 gallons	100 Gallons	
Armyworms (Beet) Beetles (Fuller Rose, Native Elm Bark) Cutworms Leafhoppers Mahogany webworms Mealybugs Mimosa webworms Moths (Such as: Cypress tip, Douglas Fir tussock, European Pine Shoot, Gypsy (2), Holly Bud, Nantucket Pine Tip, Pandora, Pitch Pine Tip, Subtropical Pine Tip, Tussock) Oakworms (Such as: California, Orangestriped, Redhumped) Redhumped caterpillars Thrips (Exposed) Weevils (Such as: Blackvine (3), Yellow poplar, Pine Reproduction)	1/6 fl. oz.	1/2 fl. oz.	4 fl. oz.	1. To reduce twig and branch feeding by bark beetles, applications should be made in the spring or early summer. 2. To kill migrating and invading gypsy moth larvae, treat trunks and foliage. 3. Blackvine weevils are night feeders. Late afternoon spraying will give control in some areas.
Beetles (Such as: Cottonwood Leaf (1), Elm leaf, Flea, Willow leaf)	1/6 to 1/3 Fl. oz.	1/2 to 1 Fl. oz.	1 pt. to 1qt	1. For cottonwood leaf beetles, use Cyren 4E in water to control larvae and adults infesting cottonwoods. Make the treatment when field counts indicate damaging beetle populations are developing or present.

<p>Borers (1): Clearwing moths (Such as: Ash, Dogwood, Lesser peachtree, Lilac, Oak, Rhododendron.) Metallic wood (Such as: Bronze birch, Flatheaded appletree, Twolined chestnut) Longhorned beetles (Such as: Locust, Red oak) Leafminers Needle Miners (Such as: Jeffrey Pine, Lodgepole pine, Spruce) Scale crawlers (Such as: Cottony cushion, Cottony maple, Euonymus, Fletcher, Florida wax, Golden Oak, Hemispherical, Lecanium, Magnolia, Oak kermes, Oystershell, Pine needle, San jose, tea, White birch)</p>	1/3 fl. oz.	1 fl. oz.	1 gal.	1. For borers, apply Cyren 4E to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your State Agricultural Experiment Station or Extension Service specialist for proper time to treat. Apply uniformly as a coarse low-pressure spray.
Borers (Such as: Cottonwood, Peachtree (1))	1 fl. oz.	3 fl. oz.	3 gal.	1. For peachtree borers, apply Cyren 4E in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly-hatched larvae enter the trees. Apply as a coarse, low-pressure spray. Thoroughly cover all bark areas from ground level to scaffold limbs.
Beetles (Such as: Ambrosia, Anobidae, Black turpentine, Cottonwood leaf, Elm leaf, European elm bark, Flea, Fuller rose, Japanese, Juno, Native elm bark, Southern pine, Willow leaf) (1)	2 2/3 fl. oz.	8 fl. oz.	2 gal.	1. For preventive treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees when damage occurs but before adult beetles begin to emerge.

Numbers in parentheses refer to Specific Directions

Tree and Forest Pests: Nurseries, Plantations, and Felled Trees

Use **Cyren 4E** insecticide to treat shade and flowering trees, plantation trees, transplant trees, and evergreens found to be infested with pests listed in the following table. Felled trees, such as elms, should be treated as necessary. Dilute **Cyren 4E** with water as directed in the table and apply using suitable hand or power-operated spray equipment in a manner to provide complete and uniform coverage. For best results, apply a coarse spray to thoroughly wet both upper and lower leaf surfaces and infested limb and trunk areas. Attempt to penetrate dense foliage, but avoid overspraying to the point of excessive runoff. Attention: For felled trees, treat after cutting; do not handle until spray has dried. Do not treat bearing fruit and nut trees with **Cyren 4E** except as indicated in the Dormant Spray section. Treat when pests appear and repeat at 7 to 10 day intervals, if needed.

Consult your State Agricultural Experiment Station or Extension Service specialist for application timing and other specific use information.

Pest	Amount of Cyren 4E in Water to Make:		Specific directions
	1 gallon	100 gallons	
Adelgids (Such as: Cooley and Eastern spruce gall, Pine bark) Aphids (Such as: Apple, Chrysanthemum, Cottonwood, Elm leaf, Peach, Rose, Spirea, Woolly) Bagworms (1) Boxelder bugs Cankerworms Catalpa sphinx Citrus mealybugs Elm spanworms Fall webworms Greenshaded mapleworms Jackpine budworms Juniper webworms Katydid Lace bugs Leafhoppers Leafrollers (2) Maple leafcutters (3) Mites (Such as: Clover, Red spider, southern red) (4) Oak skeletonizers Poplar tentmakers Puss caterpillars Sawflies, exposed (Such as: Pine, Pin oak) Spring elm caterpillars Spruce budworms Tent caterpillars (Such as: Eastern, Forest, Western) Walnut caterpillars Western spruce budworms Yellownecked caterpillars	1/12 fl. oz	8 fl. oz	1. For bagworms, treat when insects are in the crawler stage. 2. For effective control of leafrollers, spray should be applied before leaves are tightly rolled. 3. For maple leafcutter on maple trees, apply spray to larvae as cases are being formed. Do not treat sugar maple trees intended for maple syrup production. 4. For effective control of spider mites, when large numbers of eggs are present, apply a second spray after 3 to 5 days in the South or 7 to 10 days in the North after initial treatment to control newly-hatched nymphs.

TREE AND FOREST PESTS

Pest	Amount of Cyren 4E in Water to Make:		Specific directions
	1 gallon	100 gallons	
Beetles (Fuler rose, Native elm bark) (1) Leafhoppers Mahogany webworms Mealybugs Mimosa webworms Moths (Such as: Browntail, Cypress tip, Douglas fir tussock, European pine shoot, Gypsy (2), Holly bud, Nantucket pine tip, Pandora, Pitch pine tip, Subtrical pine tip, Tussock) Oakworms (Such as: California, Orange-striped, Redhumped) Redhumped caterpillars Thrips (exposed) Weevils (Such as: Blackvine (3), Yellow poplar, Pine reproduction)	1/8 fl. oz.	1 pt.	1. To reduce twig and branch feeding by bark beetles, applications should be made in the spring or early summer. 2. To kill migrating and invading gypsy moth larvae, treat trunk and foliage. 3. Blackvine weevils are night feeders. Late afternoon spraying will give control in some areas.
Beetles (Such as: Cottonwood leaf (1), Elm leaf, Flea, Willow leaf)	1/8 to 1/3 fl. oz.	1 pt to 1 qt.	1. For cottonwood leaf beetles, use Cyren 4E in water to control larvae and adults infesting cottonwoods. Make the treatment when field counts indicate damaging beetle populations are developing or present. For seedlings use 8 to 20 gallons of spray volume per acre.
Borers (1): Clearwing moths (Such as: Ash, Dogwood, Lesser peachtree, Lilac, Oak, Rhododendron.) Metallic wood (Such as: Bronze birch, Flatheaded appletree, Twisted chestnut) Longhorned beetles (Such as: Locust, Red oak) Cranberry girdler larvae (2) Leafminers Lilac, borer Needleminers (Such as: Jeffrey pine, Lodgepole pine, Spruce) Scale crawlers (Such as: Cottoncushion, Cottony maple, Euonymus, Fletcher, Florida wax, Golden oak, Hemispherical, Lecanium, Magnolia, Oak kermes, Oystershell, Pine needle, San Jose, Tea, White birch)	1/3 fl. oz.	1 qt	1. For borers, apply Cyren 4E to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your local State Agricultural Experimental Station or Extension Service specialist for proper time to treat. Apply uniformly as a coarse low-pressure spray. 2. For cranberry girdler larvae, infesting Douglas fir seedlings apply 1 quart of Cyren 4E per acre. Direct spray at the lower crown and stems using 50 gallons of water per acre. Irrigate immediately after application for soil penetration of 1-2 inches. Treat after egg laying during the summer.

<p>Borers (Such as: Cottonwood, Peachtree (1))</p>	<p>1fl. oz.</p>	<p>3 qt</p>	<p>1. For peach tree borers, apply Cyren 4E in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly-hatched larvae enter the trees. Apply as a coarse low-pressure spray. Thoroughly wet all bark areas from ground level to scaffold limbs.</p>
<p>Beetles (1) (Such as: Cottonwood weevil, Elm leaf, Flea, Fuller rose, Native elm bark (2), Willow weevil)</p>	<p>1 1/3 fl. oz.</p>	<p>1 gal.</p>	<p>1. For preventive treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees or logs when damage occurs but before adult beetles begin to emerge. For plantation trees, apply to individual trees using suitable hand- or power-operated spray equipment.</p> <p>2. To prevent native elm bark beetles from overwintering in uninfested trees, apply Cyren 4E in water to the bottom 8 feet of the trunk. Wet the trunk thoroughly but do not spray to runoff. Care should be taken to apply the spray right to the base of the root flare. Application can be made with either a backpack mistblower or a hydraulic pressure sprayer from spring through to early fall. To reduce the twig and branch feeding on uninfested trees deemed to be of high value, apply a water spray to the tree crown. Application should be made in the spring or early summer using a sprayer that will give thorough coverage to the tree crown.</p>

Beetles (Such as: Ambrosia, Anobidae, Black turpentine, Blister, European spruce bark, Japanese, Juno, Southern pine, Spruce) (1) Carpenter ants Termites	2 2/3 fl. oz.	2 gal.	1. For preventive treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees or logs when damage occurs or before adult beetles begin to emerge. For plantation trees, apply to individual trees using suitable hand- or power-operated spray equipment.
Weevils (Such as: northern pine, Palee, Pitch-eating, Twig) (1)	5 1/3 fl. oz.	4 gal.	1. For Southern pine seedlings, treat immediately after transplanting. Treat each seedling with enough spray to thoroughly wet the foliage and stems to the point of runoff but do not use more than 6 gallons of spray dilution per acre.

Numbers in parentheses refer to Specific Directions

Dormant Spray : Tree and Forest Pests

Use *Cyren 4E* insecticide as a dormant or delayed dormant spray at the rates indicated to control the listed insects. Spray the entire tree to runoff using suitable ground spray equipment. Use the higher dosage of *Cyren 4E* insecticide for severe infestations. Use oil as recommended by your State Agricultural Experiment Station or Extension Service specialist.

Restrictions: Make only one application during the dormant season. Do not allow meat or dairy animals to graze in treated areas.

Pest	Amount of <i>Cyren 4E</i> in water to make		Specific Directions
	1 gal.	100 gals.	
Aphid (Such as: Mealy plum, Rosy apple, Woolly apple) Borers (Such as: Peach twig) Cutworm (Such as: climbing) Leafrollers (Such as: Pandemic) Pear psylla adults Plant bugs Scale (Such as: San Jose)	1/12 to 1/6 fl. oz.	1/2 to 1 pint	Tank mix with 1 to 2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water.

Warranty Limitations and Disclaimer

Cheminova warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions therein under normal conditions of use. THIS IS THE ONLY WARRANTY MADE ON THIS PRODUCT. NO OTHER EXPRESS AND NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OUTSIDE OF THIS LABEL. Therefore, neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), under abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes, etc.) or under conditions not reasonably foreseeable to or beyond the control of seller.

When buyer or user suffers losses or damages resulting from the use or handling of this product (including claims based on contract, negligence, strict liability, or other legal theories), buyer or user must promptly notify in writing Cheminova of any claims to be eligible to receive either remedy given below. The EXCLUSIVE REMEDY OF THE BUYER OR USER and the LIMIT OF LIABILITY of Cheminova or any other seller will be one of the following, at the election of Cheminova.

- (1) Refund of purchase price paid by buyer or user for product bought or
- (2) Replacement of amount of product used.

The seller will not be liable for consequential or incidental damages or losses.

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