NATIONAL PESTICIDE INFORMATION CENTER

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Thank you for visiting the National Pesticide Information Center's fact sheets.

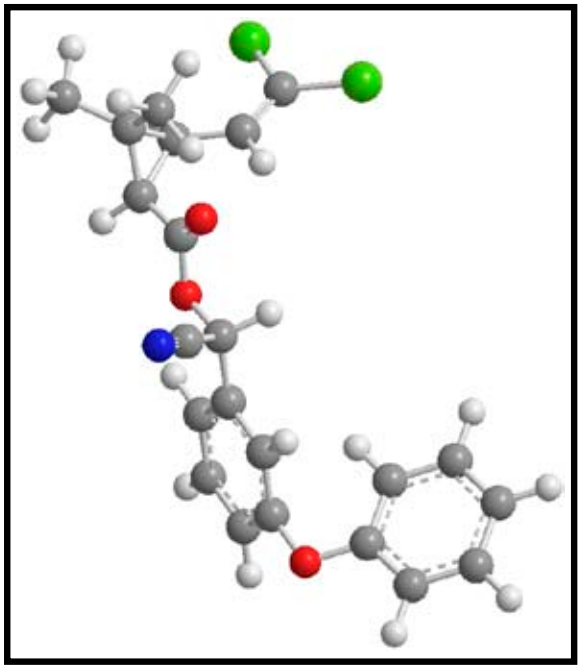
Some of the information in the following fact sheet (scroll down) is out-of-date. NPIC is planning to update this fact sheet in the future. In the meantime, updated information is available on the US EPA's website.

Some of the information in the following fact sheet (scroll down) is out-of-date. NPIC has started a *NEW* set of fact sheets. If you would like to be notified when NPIC releases new publications, send an email to npicupdates@ace.orst.edu with "subscribe" in the subject line.

Check out our new technical fact sheet on resmethrin!

Please call NPIC with any questions you have about pesticides at **1-800-858-PEST (7378)**.

Molecular Structure - Cypermethrin



NPTN fact sheets are designed to answer questions that are commonly asked by the general public about pesticides that are regulated by the U.S. Environmental Protection Agency (US EPA). This document is intended to be educational in nature and helpful to consumers for making decisions about pesticide use.

National Pesticide Telecommunications Network

Cypermethrin

The Pesticide Label: Labels provide directions for the proper use of a pesticide product. *Be sure to read the entire label before using any product.* A signal word on each product label indicates the product's short-term toxicity.

CAUTION- low toxicity **WARNING- moderate toxicity** **DANGER- high toxicity**

What is cypermethrin?

- Cypermethrin is a pyrethroid insecticide. It was first synthesized in 1974 (1).
- Cypermethrin is a synthetic chemical similar to the pyrethrins in pyrethrum extract (which comes from the chrysanthemum plant). Pyrethroids, including cypermethrin were designed to be effective longer than pyrethrins (1).

How does cypermethrin work?

- Cypermethrin kills insects that eat or come into contact with it (2).
- Cypermethrin works by quickly affecting the insect's central nervous system.

What are some products that contain cypermethrin?

- termiticides
- household insecticides
- outdoor insecticides
- Ammo™
- Cybush®
- Cynoff ™
- Cyperkill
- Demon®

How toxic is cypermethrin?

Animals

- Cockroach brain cells exposed to very small doses (up to 0.02 micrograms per gram of brain weight or μg/g) of cypermethrin exhibited a nervous system response, which in cockroaches, would result in restlessness, incoordination, prostration, and paralysis (3). See box on **laboratory testing**.
- Mice exposed to small doses (0.3 to 4.3 μg/g) of cypermethrin displayed symptoms including writhing, convulsions, and salivation (4).
- Rats exposed to cypermethrin exhibited similar symptoms including tremors, seizures, writhing, and salivation as well as burrowing behavior (5).
- Cypermethrin may be a weak skin sensitizer in guinea pigs (2, 6).
- Newborn rats were more sensitive to cypermethrin than adult rats. The liver enzymes that break down cypermethrin in the body are not completely developed in the newborn rats (7).

Humans

- People handling or working with pyrethrins and pyrethroids (including cypermethrin) sometimes developed tingling, burning, dizziness,and itching (1, 5).

Laboratory Testing: Before pesticides are registered by the US EPA, they must undergo laboratory testing for short-term and long-term health effects. In these tests, laboratory animals are purposely fed a pesticide at high doses to cause toxic effects. These tests help scientists judge how these chemicals might affect humans, domestic animals, and wildlife in cases of overexposure. When pesticide products are used according to label directions, toxic effects are not likely to occur because the amount of pesticide that people and animals may be exposed to is low compared to the doses fed to laboratory animals.

Does cypermethrin break down and leave the body?

Animals

- Both male and female rats excreted 50-65% of cypermethrin in their urine within 48 hours. Rats excreted 30% of the cypermethrin in their feces within 3 days (1).

Humans

- Humans excrete cypermethrin rapidly. Men who voluntarily ingested low doses of cypermethrin (0.25, 0.5, 1, or 1.5 milligrams per kilogram of body weight or mg/kg) in corn oil excreted between 49 to 78 percent of cypermethrin within 24 hours (1). These studies, along with results from animal studies, indicate that cypermethrin is unlikely to accumulate in the body.

Effects of cypermethrin on human health and the environment depend on how much cypermethrin is present and the length and frequency of exposure. Effects also depend on the health of a person and/or certain environmental factors.

Is cypermethrin likely to cause cancer?

Animals

- Mice fed high doses (up to 1600 mg/kg) over a lifetime did not develop cancer (malignant tumors) (1).
- However, some of the female mice developed benign (non-cancerous) lung tumors (1). See box on **cancer**.

Humans

- The US EPA has classified cypermethrin as a possible human carcinogen (group C) because there is limited evidence that it causes cancer in animals (6, 8).
- Scientists have no data from work-related, accidental poisoning, or epidemiological studies that indicate whether or not cypermethrin is likely to cause cancer in humans.

Cancer: The U.S. EPA has strict guidelines that require testing of pesticides for their potential to cause cancer. These studies involve feeding laboratory animals large daily doses of the pesticide for up to 2 years. These animals are compared with a group of animals that did not receive the chemical. Animal studies help show whether a chemical is a potential human carcinogen. If a pesticide does not cause cancer in animal tests, then the EPA considers it unlikely the pesticide will cause cancer in humans.

Does cypermethrin cause reproductive or birth effects?

Animals

- Cypermethrin studies with rats did not show any adverse reproductive effects (1). There was no evidence of birth defects in rats (1).

Humans

- Scientists have no data from work-related, accidental poisonings, or epidemiological studies that indicate whether or not cypermethrin is likely to cause reproductive problems or birth defects in humans.

What happens to cypermethrin in the environment?

- The typical half-life of cypermethrin in the soil is 30 days, although it can range from two to eight weeks (6, 9). Soil microbes rapidly break down cypermethrin (6). See box on **half-life**.
- Cypermethrin has an extremely low potential to move in the soil. It is unlikely to contaminate groundwater because it binds tightly to soil particles (6). Cypermethrin is stable in sunlight.
- The average half-life of cypermethrin on foliage is 5 days (9).

Half-life is the time required for half of the compound to degrade.

1 half-life	**=**	**50% degraded**
2 half-lives	**=**	**75% degraded**
3 half-lives	**=**	**88% degraded**
4 half-lives	**=**	**94% degraded**
5 half-lives	**=**	**97% degraded**

Remember that the amount of chemical remaining after a half-life will always depend on the amount of the chemical originally

What effects does cypermethrin have on wildlife?

- Cypermethrin is highly toxic to fish (6).
- Some products for agricultural and commercial outdoor applications are limited to use by Certified Applicators (6). Such products bear specific precautions and directions to avoid contamination of water (6).
- When cypermethrin products are used according to the label's directions applications around the home or other residential sites pose little risk to aquatic life.
- Cypermethrin is highly toxic to bees (6).
- Cypermethrin is very highly toxic to water insects (6).
- Cypermethrin is very low in toxicity to birds (6).

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