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NPIC Technical Fact Sheets are designed to provide information that is technical in nature for individuals with a scientific background or familiarity with the regulation of pesticides by the U.S. Environmental Protection Agency (U.S. EPA). This document is intended to be helpful to professionals and to the general public for making decisions about pesticide use.

Hexaflumuron

(General Fact Sheet)

For technical information please refer to the Technical Fact Sheet

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 potential hazard.

CAUTION - low toxicity

WARNING - moderate toxicity

DANGER - high toxicity

What is hexaflumuron?

- Hexaflumuron is a termiticide (an insecticide specifically used on termites) first registered in the United States in 1994.
- This chemical is used as part of a termite inspection, monitoring and baiting system.
- It is the first active ingredient registered with the EPA as a reduced-risk pesticide. A reduced-risk pesticide is one the EPA believes poses less risk to human health and the environment than existing alternatives (1).

How does hexaflumuron work?

- Hexaflumuron is an insect growth regulator (IGR) that works by stopping the insect's growth. It interferes with chitin synthesis, which termites need to form a new exoskeleton.
- Hexaflumuron is part of a pest monitoring system and is used selectively in baiting stations where termite activity is present. Termites are social insects that share food and feeding sites. Foraging termites recruit nest mates to feeding sites by leaving a chemical trail to the site. After a few termites feed on the hexaflumuron bait, it is expected that the other members of the colony will also feed on the bait.
- Pest control operators use hexaflumuron as part of an aboveground and underground baiting system. They place it in tamper-resistant bait stations where foraging termites consume it.

Will I be exposed to hexaflumuron?

- Manufacturers combine hexaflumuron with other ingredients that form bait and enclose it in a tamper-resistant bait station. The bait is added to the station only after evidence of termite foraging is detected. This minimizes exposure, drift, or ground or surface water contamination (1). This application can be done only by a qualified pest control company.
- It is unlikely that humans, pets, or non-target species will be exposed.

Laboratory Testing: Before pesticides are registered by the U.S. EPA, they must undergo laboratory testing for short-term and long-term health effects. Laboratory animals are purposely fed high enough 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 the label directions, toxic effects are not likely to occur because the amount of pesticide that people and pets may be exposed to is low compared to the doses fed to

What is the toxicity of hexaflumuron?

Animals

- Hexaflumuron has a low toxicity when fed to rats in laboratory studies (2). See boxes on **LD₅₀**, **Laboratory Testing box** and **Toxicity Categories**.
- Laboratory tests indicate hexaflumuron is non-irritating to the skin and eyes of rabbits (3).

Humans

- Scientists do not consider hexaflumuron a skin sensitizer (3).

Does hexaflumuron break down and leave the body?

Animals

- Currently, no information is available concerning the metabolism and excretion of hexaflumuron in animals.

Humans

- Currently, no information is available concerning the metabolism and excretion of hexaflumuron in humans.

Is hexaflumuron likely to cause cancer?

Animals

- Rats and mice fed high doses of hexaflumuron for two years do not develop cancer (3). **See Cancer box** (page 3).

Humans

- Based on the results of animal studies, hexaflumuron is not expected to increase the risk of cancer in humans (3).

Toxicity Category (5)

	High Toxicity (Danger)	Moderate Toxicity (Warning)	Low Toxicity (Caution)	Very Low Toxicity (Caution)
Oral LD ₅₀	Less than 50 mg/kg	50 - 500 mg/kg	500 - 5000 mg/kg	Greater than 5000 mg/kg
Dermal LD ₅₀	Less than 200 mg/kg	200 - 2000 mg/kg	2000 - 5000 mg/kg	Greater than 5000 mg/kg
Inhalation LC ₅₀	Less than 0.05 mg/l	0.05 - 0.5 mg/l	0.5 - 2 mg/l	Greater than 2 mg/l
Eye Effects	Corrosive	Irritation persisting for 7 days	Irritation reversible within 7 days	Minimal effects, gone within 24 hrs
Skin Effects	Corrosive	Severe irritation at 72 hours	Moderate irritation at 72 hours	Mild or slight irritation

LD₅₀/LC₅₀: A common measure of acute toxicity is the lethal dose (LD₅₀) or lethal concentration (LC₅₀) that causes death (resulting from a single or limited exposure) in 50 percent of the treated animals. LD₅₀ is generally expressed as the dose in milligrams (mg) of chemical per kilogram (kg) of body weight. LC₅₀ is often expressed as mg of chemical per volume (e.g., liter (L)) of medium (i.e., air or water) the organism is exposed to. Chemicals are considered highly toxic when the LD₅₀/LC₅₀ is small and practically non-toxic when the value is large. However, the LD₅₀/LC₅₀ does not reflect any effects from long-term exposure (i.e., cancer, birth defects, or reproductive toxicity) that may occur at levels below those that cause death.

Does hexaflumuron cause reproductive or birth effects?

- Since there is very limited potential for human exposure to hexaflumuron, EPA does not require testing on reproductive or birth effects (3).

What happens to hexaflumuron in the environment?

- In anaerobic soil hexaflumuron has a half-life ranging from 40-64 days (6). **See Half-life box.**
- Hexaflumuron has low mobility in the soil. It binds strongly to soil particles and is not highly soluble in water. It is not likely to contaminate surface or groundwater (6).
- Based on use the pattern, hexaflumuron is not expected to present a groundwater hazard (3).

What effects does hexaflumuron have on wildlife?

- Hexaflumuron is highly toxic to aquatic invertebrates (7). Based on the use pattern, these hazards are unlikely to occur in the environment.
- Hexaflumuron is virtually non-toxic to birds by ingestion (3).

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 over most of the lifetime of the animal. Based on these tests, and any other available information, EPA gives the pesticide a rating for its potential to cause cancer in humans. For example, if a pesticide does not cause cancer in animal tests at large doses, then the EPA considers it unlikely the pesticide will cause cancer in humans. Testing for cancer is not done on human subjects.

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 applied.

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