

Lepidopteran Pheromones Fact Sheet

Summary

Lepidopteran pheromones are used to disrupt the mating behavior of certain moths whose larvae destroy crops and trees. Data indicate that these compounds do not present any known risks to humans or the environment.

I. Description of the Active Ingredient

Pheromones are volatile chemicals produced by a given species to communicate with other individuals of the same species to change their behavior. For example, various species use pheromones to attract a mate, to mark territory, or to warn others of danger. Pheromones are usually effective in tiny amounts.

The lepidopteran group of insects includes butterflies and moths. All of the lepidopteran pheromones that EPA has approved for pesticide use are chemicals produced by female moths to attract a mate. The pesticide products contain synthetic versions of these naturally occurring compounds. Sometimes the relative amounts of several pheromone chemicals in a pesticide product determine which specific pests are controlled.

When the pesticide product releases pheromone into the air where males are looking for females, the males become confused and cannot easily locate the females. As a result, many of the females do not mate and lay eggs, and there are many fewer offspring than usual.

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Wide variety of places where plants grow, such as agricultural and residential sites and forests.
- **Target pests:** Specific moths whose offspring harm crops.
- **Application Methods:** There are two major ways to disperse lepidopteran pheromones:
 1. Using dispensers that slowly release the pheromone over a period of weeks. The dispensers are often attached to trees or to stakes in the field.
 2. Using ground or aerial spray equipment.

III. Assessing Risks to Human Health

Based on low toxicity in animal testing, and expected low exposure to humans, no risk to human health is expected from the use of these pheromones. During more than 10 years of use of lepidopteran pheromones as pesticides, no adverse effects have been reported.

The safety record for lepidopteran pheromones has allowed the Agency to conclude that consumption of food containing residues of the pheromones presents no risk. In addition, these pheromones can be used experimentally without a permit on up to 250 acres, versus the 10-acre limit imposed on other pesticides.

IV. Assessing Risks to the Environment

Adverse effects on non target organisms (mammals, birds, and aquatic organisms) are not expected because these pheromones are released in very small amounts to the environment and act on a select group of insects.

V. Regulatory Information

As of November 1999, EPA had registered (licensed for sale) approximately 20 moth mating pheromones as pesticide active ingredients and more than 60 individual pesticide products containing these active ingredients. See below for examples).

VI. Additional Contact Information:

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