

Verbenone (4,6,6-trimethyl-bicyclo (3.1.1) hept-3-en-2-one) (128986) Fact Sheet

Summary

The Southern pine bark beetle is a major threat to pine trees in the southeastern United States. Its reproductive cycle is controlled by varying ratios of certain natural chemicals. Verbenone, which is formed during an infestation, can act to repel the beetles from nearby healthy trees. When pouches containing verbenone are used as directed in forests, no risks are expected to humans or the environment.

I. Description of the Active Ingredient

To reproduce, pine bark beetles aggregate in large numbers in their host pine trees. At the beginning of an attack, various chemicals produced by infested trees and by the beetles attract additional beetles of the same species. When the numbers of adults and larvae approach the maximum that the tree can support, antiaggregation signal chemicals are produced to keep additional beetles away.

In the case of the Southern pine bark beetle (*Dendroctonus frontalis*), the chemical verbenone serves as a natural repellent. Verbenone is produced both by the Southern pine bark beetle itself, and by a fungus that is always present on the beetle without harming it. Both the beetle and the fungus appear to produce verbenone from chemicals already present in the tree.

Forest managers frequently try to control infestations of the Southern pine bark beetle by cutting down and sometimes burning infested trees and nearby healthy trees. They then hang verbenone pouches on nearby susceptible healthy trees to repel and confuse the beetles.

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Pine trees in forests
- **Target pests:** Southern pine bark beetle
- **Application Methods:** Verbenone is mixed with other substances so that it will be released to the air over several weeks, thereby repelling and confusing beetles looking for trees for reproduction. Pouches containing the mixture are hung on trees 10 to 12 feet above the ground.

III. Assessing Risks to Human Health

Based on animal studies and chemical properties, no toxicity is expected from use of products containing verbenone as the active ingredient. Furthermore, exposure of the

public should be minimal to non-existent, given that 1) the verbenone is contained in pouches, 2) the verbenone is released only slowly from the pouches, and 3) the pouches are hung at least 10 feet off the ground.

IV. Assessing Risks to the Environment

Various toxicity tests indicate that there is no expected risk to wildlife or the environment. Regarding exposure, the natural air concentration of verbenone in infested areas is often higher than the concentrations resulting from use of the verbenone pouches.

V. Regulatory Information

Verbenone was initially registered (licensed for sale and distribution) in December 1999 to control Southern pine bark beetles in forests. As of July 2001, the single registered product was Verbenone Pouch^(R)

VI. Producer Information

PHERO TECH (Canada), Inc.

US Contact

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VII. Additional Contact Information

[Ombudsman, Biopesticides and Pollution Prevention Division](#) (7511P)

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