

3-Methyl-2-cyclohexene-1-one (MCH) (219700) Fact Sheet

Summary

3-Methyl-2-cyclohexene-1-one or Methylcyclohexenone or MCH is used in forests to protect live trees from spruce beetles and Douglas fir beetles. The volatile, naturally occurring chemical acts as a beetle repellent. When small amounts of MCH are attached to dead trees, beetles are prevented from aggregating on the dead trees and from large scale reproduction. No harm to people or the environment is expected from the approved uses.

I. Description of the Active Ingredient

Dead and dying Douglas fir and spruce trees give off a chemical called seudenol that attracts beetles to the trees. As the insects gather on dead trees in large numbers, they are stimulated to reproduce. When the number of beetles at a tree reaches a critical density, the beetles then produce methylcyclohexenone (MCH), a pheromone that repels additional beetles and thereby protects the food supply needed by the initial beetles and their offspring. The beetles produce the MCH by making a slight chemical alteration in the seudenol, which changes the seudenol from an attractant to the repellent MCH.

Forest managers apply the MCH repellent to dead or dying trees so that beetles will avoid the dead trees, thus preventing the aggregation necessary for large scale reproduction, and reducing the numbers of beetles available to damage healthy trees.

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Douglas fir and spruce forests

- **Target pests:** Douglas fir beetle and spruce beetles

- **Application Methods:** The MCH is contained in a polyethylene slow release container that is stapled to dead or dying trees 6-12 feet above the ground. The number of containers used per tree and frequency of application depend on the level of beetle infestation.

III. Assessing Risks to Human Health

Use of methylcyclohexenone in polyethylene containers is not expected to harm humans. Toxicity tests show that MCH has very low toxicity. Exposure of humans should be minimal to non-existent, based on the approved use of MCH only in bait containers that are placed on trees in forests 6-12 feet above the ground. MCH has been used as a beetle repellent for more than 20 years with no reports of adverse effects.

IV. Assessing Risks to the Environment

Risks to nontarget species are expected to be minimal because a) MCH shows no adverse effects or very minor effects on nontarget species, and b) exposure of nontarget species is not expected to occur to any large extent because of the specific, localized method of application. Furthermore, the amount of MCH released from the product is less than would be released naturally from heavily infested trees. No adverse effects have been reported during more than 20 years of use.

V. Regulatory Information

Methylcyclohexenone was registered (licensed for sale) in June 1999 as an active pesticide ingredient. One pesticide end product containing MCH was registered at the same time. However, the product cannot be used in California until the registrant satisfies some concerns about potential exposure of endangered species.

Methylcyclohexenone has been used as a repellent of spruce and Douglas fir beetles for more than 20 years under an Experimental Use Permit.

VI. Producer (Registrant) Information

Phero Tech, Inc.

Gulf Road

Point Robert, WA 98281

VII. Additional Contact Information

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

Office of Pesticide Programs

Environmental Protection Agency

1200 Pennsylvania Avenue, NW

Washington, D.C. 20460