

1-Methylcyclopropene (MCP) (224459) Fact Sheet

Summary

1-Methylcyclopropene (1-MCP) is used as a plant regulator to inhibit ethylene production in cut flowers, potted flowers, bedding, nursery and foliage plants, and in stored fruits and vegetables. It is approved for use only in enclosed spaces, such as greenhouses, store rooms, coolers, enclosed truck trailers, controlled atmosphere food storage facilities, and shipping containers.

I. Description of the Active Ingredient

1-Methylcyclopropene is a gas under normal environmental conditions. As a pesticide active ingredient, it is used for prolonging the life of ornamental plants and cut flowers by preventing ethylene from attaching to plant tissues. It is a postharvest tool for counteracting undesirable effects of ethylene on harvested fruits and vegetables during transport and storage. Ethylene is a substance made by many plants, promotes ripening and aging of plants, flowers, fruits, and vegetables.

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Ornamental plants; cut flowers; and harvested fruits and vegetables in enclosed indoor sites, such as coolers, truck trailers, greenhouses, storage facilities, and shipping containers.
- **Target pests:** To extend the life of ornamental plants and cut flowers by preventing the Aging effects of ethylene. These effects include flower death, leaf and flower drop, and leaf yellowing. To counteract the undesirable effects of ethylene on fruits and vegetables during transport and storage, including: maintaining firmness, maintaining titratable acidity, preventing superficial scald and soft scald on apples, reducing internal ethylene production, protection from external sources of ethylene, reducing respiration, delaying ripening and senescence, reducing incidence of peel greasiness in apples, reducing incidence of core flush and mealiness in apples, and reducing chilling injury.
- **Application Methods:** For use as a plant regulator active ingredient, 1-MCP is combined with other materials. When mixed with a specific amount of water or other appropriate solution, the 1-MCP gas is released to the air. Plants, flowers, fruits and vegetables must be treated for several hours in an enclosed space for the 1-MCP to be effective. 1-MCP is applied post harvest to fruits and vegetables. It is best used immediately after harvest in combination with chilling. It can be applied immediately after harvest, prior to storage, prior to shipment, or just prior to sale. It is applied in enclosed areas so the volatile active ingredient can be effective. Workers are not

allowed into the treatment area until at least 30 minutes after the room has been vented

III. Assessing Risks to Human Health

Whether a substance poses a risk to humans or other organisms depends on two factors: how toxic the substance is, and how much of it an organism is exposed to. Therefore, the EPA considers toxicity data and exposure data in deciding whether to approve a pesticide for use.

Based on studies with laboratory animals, no adverse effects are expected to humans who are exposed to end products that contain 1-MCP, although eye irritation may occur if a user does not follow label directions. 1-MCP as a gas is not toxic to test animals. Human exposure is expected to be minimal because 1-MCP is approved only for use indoors, and the product label instructs people to leave the treatment space during treatment.

IV. Assessing Risks to the Environment

There are no expected risks to the environment because 1-MCP is approved for use only in indoor spaces, and is quickly diluted when released to open air. Toxicity tests show that 1-MCP is not expected to be harmful to living organisms or the environment.

V. Regulatory Information

Methylcyclopropene (1-MCP) was registered as an active ingredient in April 1999. As of March 22, 2006, there are five registered products that contain this active ingredient. The EPA established an exemption from the requirement of a tolerance for residues of 1-MCP in or on fruits and vegetables when used as a post harvest plant growth regulator, i.e., for the purpose of inhibiting the ripening promotion effects of ethylene. This tolerance exemption became effective July 26, 2002 (67 FR 48796). At that time, EPA registered a new product allowing for post-harvest application to apples, apricots, avocados, kiwifruit, mangos, melons, nectarines, pears, papayas, peaches, persimmons, plums, and tomatoes.

VI. Registrant Information

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VII. Additional Contact Information

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