

# Piperine (043501) Fact sheet

## Summary

Piperine's unpleasant odor and taste make it effective in products designed to repel mammals such as dogs, cats, squirrels, and skunks. Piperine can be extracted from dried black peppercorns, and is also found in other plants. Humans are regularly exposed to piperine in various products, including food. Human and environmental exposures to piperine are not expected to increase from pesticidal use of this widespread chemical. If users follow label directions, no adverse effects are expected from use of pesticide products containing piperine.

### I. Description of the Active Ingredient

Piperine is a pale yellow to yellow crystalline solid with a pungent odor and a burning aftertaste. It is slightly irritating to skin and eyes. Piperine is structurally related to capsaicin, the chemical responsible for making chili peppers hot. Although this active ingredient has been extracted from dried black peppercorns, it is manufactured synthetically for commercial uses. It is often added to prepared food to enhance aroma and flavor.

### II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** The first registered pesticide product containing piperine as an active ingredient is a mammalian repellent for residential use in non-food areas. The product, Animal Repellent Granular, is labeled for use indoors in non-living areas only (attics, basements, cellars, storage areas, garages, sheds, and barns), and for use outdoors on lawns, garden paths, flower beds, ornamental plants, trees, shrubs, and garbage bags.
- **Target pests:** Dogs, cats, ground hogs, squirrels, skunks, and raccoons.
- **Application methods:** Granular formulation is spread by hand or spreader

### III. Assessing Risks to Human Health

*Whether or not 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 determining whether to approve a pesticide for use.*

No adverse effects to humans are expected from use of piperine in pesticide repellent products because:

1. no toxic endpoints have been identified in studies or during widespread use;
2. products for repelling mammals will contain only tiny amounts of piperine;

3. the black pepper extract containing piperine is considered GRAS (generally recognized as safe for use in food) by FDA
4. piperine is approved by FDA as a direct food additive, and is present in measurable amounts in such foods as candy and baked goods;

#### **IV. Assessing Risks to the Environment**

No toxic effects have been identified in mammals, birds, or fish. Piperine repels mammals with its unpleasant odor and taste. It is not intended to harm animals.

#### **V. Regulatory Information**

March 2004: Active ingredient was initially registered (licensed for sale):

First pesticidal end product registered, "Animal Repellent Granular" (Registration # 50932-10), which also contains oil of black pepper and capsaicin as active ingredients.

#### **VI. Registrant Information**

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#### **VII. Additional Contact Information**

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