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# Mothballs: Proper Use and Alternative Controls for Clothes Moths

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In some homes, clothes moths can damage garments and other belongings. There are two common species of clothes moths in the Pacific Northwest: the webbing clothes moth (*Tineola bisselliella*) and the casemaking clothes moth (*Tinea pellionella*). The larvae, or immature form, of the moths are responsible for the damage done to personal belongings.

Clothes moth larvae do not eat synthetic fibers. They eat fibers that are of animal origin such as wool, feathers, or felt. They can, however, chew through



Larvae (above) and adult (below) of the casemaking clothes moth.



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synthetic fibers to reach dirt or stains of animal origin. They also can damage clothes that contain both synthetic fibers and wool or other animal fibers. Clothes moth larvae cannot survive on raw silk alone, but they do eat the finish on the yarn or fabric.

Clothing worn frequently (two or three times a week) is rarely damaged by clothes moths because they are active only on garments that are undisturbed for a longer period of time.

Correct pest identification is the first step in pest control. Clothes moth larvae are shiny white and about ½ inch long. The photos on this page show what the casemaking clothes moth adult and larvae look like.

There are many ways to control clothes moths, including sanitary, structural, and chemical methods. This broad approach is known as Integrated Pest Management.

## Chemical control—mothballs

One method used to control clothes moths is the use of mothballs. If you use mothballs, there are some things you should know to keep you, your family, and your pets safe. Mothballs are pesticides that can be harmful to animals or humans who swallow them or inhale their vapors at high concentrations. Alternative ways to control clothes

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moths are presented below for those who prefer not to use mothballs or other chemical treatments.

Mothballs contain either naphthalene or paradichlorobenzene as active ingredients. Both chemicals are fumigants, meaning that their volatile chemicals will vaporize at lower temperatures, such as room temperature. Naphthalene has been associated with adverse health effects occurring from misuse of mothballs in the home. Symptoms of exposure to naphthalene include headache, nausea, dizziness, and difficulty breathing. Paradichlorobenzene is also a potential hazard, although typically less so compared to naphthalene.

Note that these two active ingredients are also found in other home-use products. This publication is focused on the legal use of products labeled for the control of clothes moths.

While most people are familiar with mothballs, these chemicals are also sold in several other forms to control clothes moths, including cakes, crystals, tablets, bars, and flakes. All of these products have one very important thing in common: they must be used according to the instructions on the label.

Following the label instructions will limit your exposure to these chemicals and control the pest most effectively. It is also a legal requirement. Never mix active ingredients, such as naphthalene and paradichlorobenzene, when using mothballs.

Mothballs must be used in an airtight space, such as a garment bag or well-sealed container. Never place mothballs in an open closet or plastic garbage bag. Once vapors enter the home,

their odor can persist for a long time. People may experience symptoms or have to evacuate the home, resulting in stress and financial burden. The odor of mothballs can be detected at a few parts per billion in the air. (One part per billion is like several drops of water in an Olympic-size swimming pool.)

Never place mothballs in an area where young children or pets can reach them. Eating just one mothball containing naphthalene can damage a young child's red blood cells. Like any pesticide product, mothballs should be stored in a locked cabinet that is inaccessible to children.

## **Common examples of mothball misuse**

Be wary of recommendations for mothball use in inappropriate sites and against incorrect pests. Remember, the only recommendation that counts is the product label. The label is a legal document, and its instructions must be followed, particularly regarding where mothballs may be used and which pests they will control. In 2006, the National Pesticide Information Center recorded 769 mothball-related incidents and 465 reports of misapplication. By following the label instructions, these issues can be avoided.

Mothballs should not be used inside attics, wall voids, crawl spaces, gardens, trash cans, or vehicles. Often, mothballs are used in these locations in an effort to control some pest other than clothes moths. These pests include squirrels, skunks, deer, mice, rats, dogs, cats, raccoons, moles, snakes, pigeons, and a variety of other animals. Any such use is illegal. Since mothballs are registered pesticides, it is illegal to use them in locations that are not on the label. In addition, manufacturers do not claim that

these products are effective for anything but control of moths (or carpet beetles for some products).

A relatively common mistake is placing mothballs in an attic to repel squirrels. This is a misapplication and may cause a noxious odor throughout the home. Family members may experience the adverse health effects or even have to leave the home.

Specific products and alternative strategies exist to repel many common pests. Choose methods that are legal and effective against the specific pest. Your local office of the OSU Extension Service should be able to advise you.

## Other ways to control clothes moths

Many people do not want to use mothballs to control clothes moths. Even when used according to the label, there is a potential for inhalation of vapors or accidental ingestion by children and pets.

While cedar chips or balls smell wonderful, they do nothing to repel clothes moths.

The best way to protect your at-risk (animal-fiber) clothing from clothes moths is by keeping moths out. To protect these garments from clothes moths, first clean all of the clothing according to the manufacturer's specifications. Then place the clean clothing in airtight containers.

For existing infestations of clothes moths, you must do more. Vacuum out drawers and closets using a HEPA vacuum cleaner. Vacuum all furniture and other places that provide food sources such as lint, pet hair, and human hair. Lint and hair that have been

undisturbed for a long time are prime breeding grounds for clothes moths. After vacuuming, dispose of the vacuum bag promptly.

Boric acid dust can be used to treat cracks and crevices once the infested articles have been removed and cleaned. Always follow the label requirements when applying boric acid dusts.

For stored clothing that is not kept in airtight containers, place the clothing in the dryer or in the sun once or twice a month to destroy larvae. Shake the clothes out or brush them before putting them back in the drawer or on the hanger. This will help dislodge remaining eggs and larvae.

One last tip: Do not use rodenticide baits indoors to kill mice or rats. Their carcasses can become a breeding ground for clothes moths!

## References

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