

PUBLIC HEALTH FACT SHEET

Insect Bites and Repellents

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Why do some insects bite?

Some insects “bite” because they use animal blood for food to grow or make eggs when they reproduce.

What problems can be caused by insect bites?

Ordinarily, insect bites are just a nuisance. Most people become very uncomfortable when insects are found crawling on them or flying around them. Some bites, such as bee stings, may cause pain or allergic reactions. In rare situations, an insect bite can spread germs that cause disease. For example, certain mosquitoes can spread eastern equine encephalitis virus or West Nile virus, and certain ticks called deer ticks can spread the germ that causes Lyme disease. Only a small number of insects may be carrying disease-causing germs, so being bitten does not mean a person will become sick.

How can I reduce my chances of being bitten by a mosquito or a tick?

- Avoid outdoor activities between dusk and dawn, if possible, as this is the time of greatest mosquito activity.
- If you must be outdoors when mosquitoes are active, wear a long-sleeved shirt and long pants. Take special care to cover up the arms and legs of children playing outdoors.
- Fix any holes in your screens and make sure they are tightly attached to all your doors and windows.
- Ticks are usually found near the ground in brushy, wooded, or grassy places. If you cannot avoid these areas, wear long-sleeved, light colored shirts and long pants tucked into your socks.
- Stick to main pathways and the center of trails when hiking.
- After you have been in an area likely to have ticks, check your body for ticks. Favorite places ticks like to go include between the toes, back of the knees, groin, armpits, and neck, along the hairline, and behind the ears.

I found a tick attached to me. What should I do?

Promptly remove any attached tick using fine-point tweezers. The tick should not be squeezed or twisted, but grasped close to the skin and pulled straight out with steady pressure. The longer a tick remains attached to someone, the greater the chance it will be able to spread a disease-causing germ. Whenever someone removes an attached tick from their body, they should watch for the appearance of rash, fever or flu-like symptoms and immediately seek the advice of a health care provider should any symptoms occur, especially if the tick was attached for more than 24 hours. It may be helpful to save the tick after removal for two reasons: 1) If the person who was bitten goes on to develop signs or symptoms such as fever, flu-like symptoms or a rash, it may be helpful for the physician to know the type of tick, and 2) depending on the circumstances of the bite (i.e. when a person was bitten, the type of tick, how long it was attached), a physician may choose to treat the person who was bitten. The tick may be kept either securely sealed within a small plastic bag or attached, with clear tape, to a piece of paper. For individuals who do not wish to keep the tick, it can be either drowned in rubbing alcohol or flushed down the toilet.

How can I reduce the number of mosquitoes around my home?

- Dispose of or regularly empty any metal cans, plastic containers, ceramic pots, tires and other water holding containers (including trash cans). Mosquitoes can begin to multiply in any standing water that lasts for more than four days.
- Clean clogged roof gutters; remove leaves and debris that may prevent drainage of rainwater.
- Turn over plastic wading pools and wheelbarrows when not in use.
- Do not allow water to stagnate in birdbaths; aerate ornamental ponds or stock them with fish.
- Keep swimming pools clean and properly chlorinated; remove standing water from pool covers.
- Use landscaping to eliminate standing water that collects on your property.

How can I reduce the number of ticks around my home?

- Keep grass cut short.
- Remove leaf litter and brush.
- Prune low lying bushes to let in more sunlight.

- Keep the plants around stone walls cut short.
- Use a three-foot woodchip, mulch or gravel barrier where your lawn meets the woods.
- Keep woodpiles and birdfeeders off the ground and away from your home to help keep rodents, which may carry ticks, away from your home.
- Ask your landscaper or local nursery about plants to use in your yard that do not attract deer or use deer fencing (for yards \geq 15 acres) to help keep deer, which may carry ticks, away from your home.

If you chose to use a pesticide to reduce the number of ticks on your property, hire a licensed applicator experienced with tick control. In general, good tick control can be achieved with no more than two pesticide applications in any year. When selecting an applicator, you can ask if they will provide:

- A written pest control plan that includes information on the pesticide to be used.
- Information about non-chemical pest control alternatives.
- Signs to be posted around the property after the application.

What about using a repellent?

Repellents that contain DEET (N,N-diethyl-m-toluamide) or permethrin are widely available and have proven to be safe and effective against both ticks and mosquitoes. Repellents containing picaridin (KBR 3023) or oil of lemon eucalyptus [p-methane 3,8-diol(PMD)] also provide effective protection against mosquitoes. Any repellent you choose should be used according to the instructions on the product label.

The American Academy of Pediatrics does not recommend any repellent use on children younger than two months of age. Oil of lemon eucalyptus products should not be used on children under the age of three years. Permethrin products are not designed to be applied to the skin. They are recommended for use only on items such as clothing, shoes, bed nets, and camping gear. In addition, the following general precautions are recommended when using any repellent:

- Apply repellents only to exposed skin and/or clothing as indicated on the label. Do not use repellents under clothing.
- Never use repellents over cuts, wounds or irritated skin.
- Do not apply repellents to the eyes or mouth, and apply them sparingly around the ears. When using repellent sprays, do not spray directly on the face—spray the product on your hands first and then apply it to the face.
- Do not allow children to handle the product. When using repellents on children, apply to your hands first and then put it on the child. You should not apply repellent to children's hands.
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation are generally unnecessary for effectiveness. If biting insects do not respond to a thin film of repellent, then apply a bit more.
- After returning indoors, wash treated skin with soap and water. Also, wash treated clothing before wearing again.

Do “natural” repellents work?

A number of plant-derived products are available for use as repellents. Limited information is available regarding the health effects and effectiveness of these products. The information that is available indicates that most of these products generally do not provide the same level or duration of protection as products containing DEET or permethrin. However, in some recent studies, oil of lemon eucalyptus [p-methane 3,8-diol(PMD)] provided as much protection as low concentrations of DEET when tested against mosquitoes found in the United States. Oil of lemon eucalyptus products should not be used on children under the age of three years.

What should I do if I have an adverse reaction to a repellent?

If you suspect that you or your child is having an adverse reaction to an insect repellent, wash the treated area, remove treated clothing and call the local poison control center. In Massachusetts, the number of the Poison Control Center, which operates 24 hours a day, is 1-800-222-1222. If you go to the doctor, take the repellent with you. The label information may be useful to your physician.

Where can I get more information?

- For questions on diseases spread by mosquitoes or ticks: MDPH, Division of Epidemiology and Immunization at 617-983-6800 or toll free at 1-888-658-2850 or online at www.mass.gov/dph
- For questions on health effects of pesticides: MDPH, Center for Environmental Health at 617-624-5757
- For information on mosquito control: Massachusetts Department of Agricultural Resources, State Reclamation and Mosquito Control Board at 617-626-1777 or online at www.mass.gov/agr/mosquito/index.htm.