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Choosing and Using Insect Repellents

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Choosing the right insect repellent could help protect your health. Mosquitoes, biting flies and ticks can be annoying and sometimes pose a serious risk to public health. Insects can carry diseases such as West Nile virus and Lyme disease.

Different insect repellents are used for various applications and situations:

- For skin applications as well as for treating clothing, use aerosol and pump-spray products.
- For skin applications, use liquid, cream, lotion, spray or stick products.
- For situations when exposure to insects is minimal, use products with a low concentration of the active ingredient (such as DEET).
- For longer-lasting protection, use repellents containing higher concentrations of the active ingredient.
- In highly infested areas or for insect species that are more difficult to repel, such as black flies, you may need higher concentrations of the active ingredient.

When using an insect repellent, check the container to make sure the product has been approved by the U.S. Environmental Protection Agency (EPA). Look for an EPA-approved label and registration number. Never use a product that is not approved by the EPA.

Store insect repellent away from children's reach, such as in a locked utility cabinet or garden shed.

Using insect repellents safely

- Before using an insect repellent, read and follow all the directions and precautions on the product label. Read the entire label. Even if you have used the product before, read the label again—don't rely on your memory. Use only the amount directed, at the time and under the conditions specified and for the purpose listed.
- Do not apply an insect repellent on cuts, wounds or irritated skin.
- When using a repellent on a young child, do not apply it on the hands or near the eyes or mouth.
- Do not allow young children to apply this kind of product, and do not apply it to their hands. Instead, apply the product to your own hands and then put it on the child.

- Do not spray in enclosed areas. Avoid breathing the spray or using it near food.
- Use just enough repellent to cover the clothing and/or exposed skin.
- Do not use insect repellent under clothing.
- Avoid applying too much of the product.
- After returning indoors, wash the treated skin with soap and water.
- Wash treated clothing before wearing it again.
- Wash your hands after the application.

DEET

Most repellents rely on some percentage of N, N-diethyl-metatoluamide, which is called DEET. DEET is a chemical developed more than 50 years ago by the U.S. Army and the U.S. Department of Agriculture. Although DEET does not kill insects, its vapors discourage them from lighting on you. It is generally considered the most effective mosquito repellent known.

DEET is available in many concentrations, ranging from 4 to 100 percent. It is the active ingredient in most insect repellents. About 230 products containing DEET are registered with the EPA. Most insect repellents available in stores contain DEET.

When selecting a repellent, choose one that offers appropriate protection for the amount of time you will be outdoors. If you will be outdoors for several hours, choose a product containing a higher percentage of DEET. If your time outdoors will be limited, use a product with a lower percentage of DEET.

Are there health concerns using DEET? The EPA states that "as long as consumers follow label directions and take proper precautions, insect repellents containing DEET do not present a health concern."

The EPA no longer allows child safety claims on product labels. These claims currently appear on certain products containing a DEET concentration of 15 percent or less. Research does not support claims of child safety based on the percentage of DEET.

The Centers for Disease Control and Prevention recommend that adults use insect repellents containing less than 35 percent DEET; children should use products that contain no more than 10 percent DEET. Use repellents with DEET sparingly on children age 2 through 6 years and not at all on infants younger than 2.

Repellents without DEET

Although DEET is generally considered safe when used according to directions, some people prefer not to use it. Products containing essential oils are also available. Remember that although essential oils are derived from plants that grow naturally, they are still chemicals. Some can be hazardous if ingested or applied over wounds, cuts, irritated skin or mucus membranes such as the eyes.

Some non-DEET repellent products that are intended to be applied directly to the skin do provide some protection from mosquito bites. However, studies have suggested that other products do not protect as well nor for as long as do products containing DEET. A soybean-oil-based product has been shown to provide protection for about as long as does a product with a low concentration (4.75 percent) of DEET.

This information was excerpted and adapted from resources by the U.S. Environmental Protection Agency, *www.epa.gov/pesticides/factsheets/chemicals/deet.htm,* the Virginia Department of Health, *www.vdh.state.va.us/lhd/lenowisco/deet.htm,* and the Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, *www.cdc.gov/travel/bugs.htm.*

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