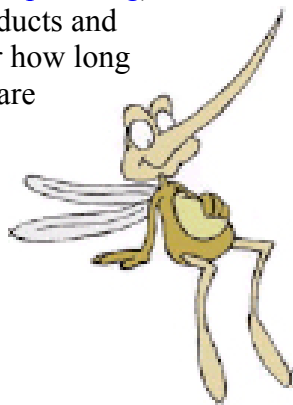


Insect Repellent

Picking the right insect repellent can protect your health! Mosquitos, biting flies, and ticks can be annoying and sometimes pose a serious risk to public health, including West Nile virus and Lyme disease.

In comparing the wide variety of insect repellents available on the market, it is important to consider form and concentration, active ingredients, cost per use, type of insect repelled, as well as other factors, such as ease of use, odor, and how the product feels on the skin. Although product labels do not require listing the length of time a product remains active on the skin, *Consumer Reports* (June 2000, www.consumerreports.org) has evaluated various products and provides estimates for how long mosquitoes and ticks are repelled by a single application of the product. Always read labels carefully to determine any special precautions in using the products.



Repellent Forms and Concentrations

- Aerosol and pump-spray products are intended for skin applications as well as for treating clothing.
- Liquid, cream, lotion, spray, and stick products enable direct skin applications.
- Products with a low concentration of active ingredient may be appropriate for situations with minimal insect exposure.
- Higher concentrations of active ingredient may be useful in highly infested areas or

with insect species that are more difficult to repel.

- Repellents containing a higher concentration of active ingredient (such as DEET) provide longer-lasting protection.

DEET Repellents

Most repellents rely on some percentage of N, N-diethyl-metatoluamide, called DEET, a chemical developed more than 50 years ago by the U.S. Army and the Department of Agriculture. DEET doesn't kill bugs, but its vapors discourage them from landing or climbing on you. It's generally acknowledged to be the most effective mosquito repellent available. *Consumer Reports* found that a product's hours of effectiveness generally increase with its percentage of DEET (<http://www.epa.gov/pesticides/factsheets/chemicals/deet.htm>). DEET is available in many different concentrations, ranging from 4 to 100 percent. It is the active ingredient in most insect repellents. Approximately 230 products containing DEET are currently registered with the U.S. Environmental Protection Agency (EPA). Most insect repellents that are available in stores are labeled with the chemical name for DEET. Choose a repellent that offers appropriate protection for the amount of time you will be outdoors. A higher percentage of DEET should be used if you will be outdoors for several hours, while a lower percentage of DEET can be used if time outdoors will be limited.

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

present a health concern.” The EPA is no longer allowing child safety claims on product labels. These claims currently appear on certain products containing a DEET concentration of 15 percent or less. The scientific data on DEET do not support product label claims of child safety based on the percentage of active ingredient (<http://www.epa.gov/pesticides/factsheets/chemicals/deet.htm>)

The Centers for Disease Control and Prevention (CDC) recommend adults use an insect repellent that contains less than 35 percent DEET, while children should use a product that contains no more than 10 percent DEET. Repellents with DEET should be used sparingly on children two through six years of age and not at all on infants younger than two years of age.

Non-DEET Repellents

Although DEET is generally considered safe when used according to directions, some people prefer not to use it. For that reason, *Consumer Reports* tested several products that use plant oils instead. It is important to remember that essential oils, while derived from plants that grow naturally, are chemicals, too. Some are potentially hazardous if ingested, applied over wounds, cuts, irritated skin, or mucus membranes such as the eyes (www.consumerreports.org).

Some non-DEET repellent products, which are intended to be applied directly to skin, also provide some protection from mosquito bites. However, studies have suggested that other products do not offer the same level of protection, or that protection does not last as long as products containing DEET. A soybean-oil-based product has been shown to provide protection for a period of time similar to a product with a low concentration of DEET (4.75 percent).

In 2005, the CDC endorsed two non-DEET repellents that have proven effective. Repellents that have the chemical picaridin or the oil of lemon eucalyptus offer “long-lasting protection against mosquito bites.”

- Picaridin is often comparable with DEET products of similar concentration. Consumers tend to like this repellent because it is more pleasant to the skin and doesn’t have the odor of DEET repellents.
- Oil of lemon eucalyptus provides protection time similar to low-concentration DEET products. It is a natural ingredient, which appeals to people who don’t like the thought of putting chemicals on their skin.

Precautions to Use with Insect Repellent

- Check the container to ensure that the product bears an EPA-approved label and registration number. Never use a product that has not been approved by the EPA!
- Read the entire label before using an insect repellent. Even if you have used it before, read the label again—don’t trust your memory.
- Follow the directions carefully; use only the amount directed, at the time and under the conditions specified, and for the purpose listed.
- Store insect repellent away from children’s reach, in a locked utility cabinet or garden shed.



Using Insect Repellents Safely

- Read and follow all directions and precautions on the product label.
- Do not apply over cuts, wounds, or irritated skin.
- Do not apply near the eyes and mouth of young children.

- Do not allow young children to apply this product, and do not apply to children's hands. When using on children, apply to your own hands; then put it on the child.
- Do not spray in closed areas. Avoid breathing a repellent spray, and do not use near food.
- Use just enough repellent to cover exposed skin and/or clothing.
- Do not use under clothing. Avoid over-application of the product.
- After returning indoors, wash the treated skin with soap and water.
- Wash treated clothing before wearing it again.

Prepared by: Courtney J. Schoessow, MPH, Extension Program Specialist–Health, Texas Cooperative Extension, December 2005, Family & Consumer Sciences website:
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