

Why You Should Use Mosquito Repellent

Insect repellent helps reduce your exposure to mosquito bites that may carry West Nile virus or other diseases, and allows you to continue to play, work, and enjoy the outdoors with a lower risk of disease.

When You Should Use Mosquito Repellent

Use repellent when you go outdoors. You should use repellent even if you're only going outside for a few minutes-it only takes one bite to get West Nile virus. Many of the mosquitoes that carry the West Nile virus bite between dusk and dawn. If you're outside during these hours pay special attention to using repellent.

Which Mosquito Repellents Work Best

A wide variety of insect repellent products are available. CDC recommends the use of products containing active ingredients which have been registered with the U.S. Environmental Protection Agency (EPA) for use as repellents applied to skin and clothing.

When EPA registers a repellent, they evaluate the product for efficacy and potential effects on human beings and the environment. EPA registration means that EPA does not expect a product, when used according to the instructions label, to cause unreasonable adverse effects to human health or the environment.

Of the active ingredients registered with the EPA, two have demonstrated a higher degree of efficacy in the peer-reviewed, scientific literature.* Products containing these active ingredients typically provide longer-lasting protection than others:

- DEET (N,N-diethyl-m-toluamide)
- Picaridin (KBR 3023)

Oil of lemon eucalyptus [p-menthane 3,8-diol (PMD)], a plant based repellent, is also registered with EPA. In two recent scientific publications, when oil of lemon eucalyptus was tested against mosquitoes found in the US it provided protection similar to repellents with low concentrations of DEET.

These recommendations are for domestic use in the United States. See [CDC Travelers' Health website](#) for specific recommendations concerning protection from insects when traveling outside the United States.

In addition, certain products which contain permethrin are recommended for use on clothing, shoes, bed nets, and camping gear, and are registered with EPA for this use. Permethrin is highly effective as an insecticide and as a repellent. Permethrin-treated clothing repels and kills ticks, mosquitoes, and other arthropods and retains this effect after repeated laundering. The permethrin insecticide should be reapplied following the label instructions. Some commercial products are available pretreated with permethrin. Permethrin is not to be used directly on skin.

How Often You Should Re-apply Repellents

Follow the directions on the product you are using. Sweating or getting wet may mean that you need to re-apply more frequently.

How the Percentage of Active Ingredient in a Product Relates to Protection Time

In general, the more active ingredient (higher percentage) it has, the longer a repellent will protect you from mosquitoes. For example, DEET products are available in many formulations--something with 30% DEET will protect you longer than one with 5% DEET. You cannot directly compare the percentage of one active ingredient to another, however.

Use your common sense. Re-apply repellent if you start to get bitten and follow the label instructions.

As a “rule of thumb”:

- For **many hours** outside (over 3-4 hours) and/or where biting is very intense—look for a repellent containing more than 20% DEET. Products with more than 50% DEET do not offer additional protection.
- For **shorter periods** of time, repellents containing less than 20% DEET, the repellent currently available with 7% picaridin or one of the products containing oil of lemon eucalyptus may provide adequate protection. There are other products available, but they may not protect as long as those named here.
- Even if you’re going out for 10 minutes use a repellent —that’s long enough to get bitten!

Hint: Applying permethrin to your clothing ahead of time will give you even greater protection.

Remember—if you’re getting bitten, do something about it!

Choose a repellent that you will use consistently. Also, choose a product that will provide sufficient protection for the amount of time that you will be spending outdoors. Product labels often indicate the length of time that you can expect protection from a product. If you are concerned about using insect repellent, consult your health care provider for advice.

The National Pesticide Information Center (NPIC) can also provide information through a toll-free number, 1-800-858-7378 or <http://npic.orst.edu>.

General Considerations for Using Repellents Safely

- Always follow the instructions on the product label.
- Apply repellents only to exposed skin and/or clothing (as directed on the product label.) Do not use repellents under clothing.
- Never use repellents over cuts, wounds or irritated skin.
- Do not apply to eyes or mouth, and apply sparingly around ears. When using sprays, do not spray directly on face—spray on hands first and then apply to face.
- Do not allow children to handle the product. When using on children, apply to your own hands first and then put it on the child. You may not want to apply 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 or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing it again. (This precaution may vary with different repellents—check the product label.)
- If you or your child get a rash or other bad reaction from an insect repellent, stop using the repellent, wash the repellent off with mild soap and water, and call a local poison control center for further guidance. If you go to a doctor because of the repellent, take the repellent with you to show the doctor.

Note that the label for products containing oil of lemon eucalyptus specifies that they should not to be used on children under the age of three years.

Other than those listed above, EPA does not recommend any additional precautions for using registered repellents on pregnant or lactating women, or on children.