

FACT SHEET

Mosquito Repellents

What insect repellents provide protection against mosquito-borne diseases such as West Nile virus?

Currently there are four recommended active ingredients registered with the U.S. Environmental Protection Agency (EPA) for use in mosquito repellents: DEET, picaridin, oil of lemon eucalyptus, and permethrin. Repellents containing the active ingredient DEET and picaridin continue to be the most highly effective repellent options. DEET, picaridin, and oil of lemon eucalyptus can be applied directly to the skin. Permethrin is only recommended for use on clothing, shoes, bed nets, and camping gear. Permethrin should not be applied directly on skin.

Will these mosquito repellents provide protection against other insect bites?

DEET-based repellents not only protect against mosquitoes but also repel a wide variety of insects such as ticks, black flies, fleas, and no-see-ums. Permethrin can also protect against ticks and other arthropods. In the U.S., oil of lemon eucalyptus and picaridin have been proven to only provide protection against mosquito bites.

Is DEET safe?

Yes, repellents containing DEET are very safe when used according to the directions. Refer to the Iowa Dept. of Public Health's DEET fact sheet for more information.

Is it safe to use mosquito repellents on children?

Repellent products must state any age restriction. If there is none, EPA has not required a restriction on the use of the product. Oil of lemon eucalyptus should not be used on children under three years of age. Although there are no definitive studies in the scientific literature about what concentration of DEET is safe for children, the American Academy of Pediatrics has stated that insect repellents containing DEET with a concentration of 30 percent appear to be as safe as products with a concentration of 10 percent when used according to the directions on the product label. DEET is not recommended for use on children under 2 months of age; most experts agree it is safe to apply insect repellent with low concentrations of DEET to children over 2 months of age. The safest approach for infants and children under 2 years of age is to minimize exposure to mosquitoes, use insect repellents that have a DEET concentration of 10 percent or less, and properly follow the manufacturer's label directions for application.

When should mosquito repellent be used?

Persons should use repellent anytime they go outside, especially during prime mosquito biting hours, between dusk and dawn. Label instructions should be followed appropriately.

How often should mosquito repellent be applied?

The label directions on the product being used should always be followed. Length of protection against mosquito bites varies with the amount of the active ingredient, environmental factors such as temperature and humidity, amount of physical activity/perspiration, water exposure, and other factors.

What precautions should be followed when using insect repellents?

- Read and carefully follow product label directions and precautions.
- Apply repellent sparingly on exposed skin and/or clothing.
- Do not apply repellent near eyes, lips, or mouth.
- Never apply repellents over cuts, wounds, or irritated skin.
- Avoid using sprays in enclosed areas.
- Do not use repellents near food.
- Do not apply repellent to the hands of young children.
- Do not allow young children to apply repellent to themselves; have an adult properly apply repellent to children.

- After returning indoors, wash treated skin with soap and warm water.
- Avoid over application. Heavy application is not necessary to achieve protection.
- Wash treated clothing before wearing again.

Can mosquito repellents be used with sunscreen?

Yes. People can, and should, use both a sunscreen and an insect repellent when they are outdoors. Follow the instructions on the package for proper application of each product. In general, the recommendation is to apply sunscreen first, followed by repellent.

Should combination sunscreen/DEET-based insect repellents be used?

At this time there is no data available regarding the safety and efficacy of DEET/sunscreen combination products or the use of the other active repellents used in combination with sunscreen. CDC does not recommend using products that combine DEET with sunscreen, because the instructions for the safe use of DEET and sunscreen are different. In most cases, DEET does not need to be reapplied as frequently as sunscreen. Sunscreen often requires frequent reapplication. It is not necessary to reapply insect repellent every time you reapply sunscreen.

Where can additional information regarding insect repellent be found?

- Environmental Protection Agency: <http://www.epa.gov/REDS/factsheets/0002fact.pdf>
- Centers for Disease Control and Prevention <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>
- National Pesticide Information Center-Tel: 800-858-7378 <http://npic.orst.edu>
- Poison Control Center – Tel: 800-222-1222