



Mosquito Repellents

Guidelines for Protection from Mosquito Bites

Insect repellents can help reduce exposure to mosquito bites which may contain viruses that can make you ill. Using insect repellent allows you to continue to play or work outdoors with a reduced risk of mosquito bites. Persons should use repellent anytime they go outdoors, especially during prime mosquito biting hours (between dusk and dawn). Female mosquitoes bite people and animals because they need the protein found in blood to help develop their eggs. Mosquitoes are attracted to people by skin odors and the carbon dioxide exhaled from your breath and body. **Repellents do not kill mosquitoes.** The active ingredients in insect repellents make you unattractive to the mosquito. Repellents are effective only at short distances from the treated surface, so you may still see mosquitoes flying nearby.

The Louisville Metro Department of Public Health and Wellness supports the Centers for Disease Control (CDC) recommendation for the use of mosquito repellents containing active ingredients which have been registered with the U.S. Environmental Protection Agency (EPA). EPA registration of the repellent active ingredients indicates the materials have been reviewed and approved for effectiveness and human safety when applied according to instructions on the label.

Two active ingredients registered with the EPA, provide longer-lasting protection than others:

- **DEET (N,N-diethyl-m-toluamide)** : DEET-based repellents applied according to label instructions continue to be the most highly effective repellent option. 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. Lower concentration DEET-based products (20% to 35 %) can be used by adults for most situations. **The American Academy of Pediatrics recommends a DEET concentration of 10% or less for children.**
- **Picaridin (KBR 3023 / Bayrepel)** : has demonstrated excellent repellent qualities comparable with those of standard DEET. When used according to manufacturer's directions for use, it is a safe and effective insect repellent for human use that is non-toxic and is non-irritating to the skin. It does not need to be washed off when returning indoors.

Other insect repellents currently approved for use :

- **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. **Instructions for products containing oil of lemon eucalyptus : Do Not use on children under 3 years old**
- **Products which contain permethrin** : are recommended only for use on clothing, shoes, bed nets, and camping gear (registered with the EPA for this use). **Permethrin should not be applied directly to the skin.** Permethrin-treated clothing repels and kills ticks, mosquitoes, and other arthropods and retains this effect after repeated laundering. Follow all instructions when applying or reapplying permethrin insecticide to clothing.

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

Guidelines for insect repellent use:

- **Read the entire product label before use**, especially when using repellent on children.
- 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. Do not 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.
- After returning indoors, bathe or wash treated skin with soap and water. This is particularly important when repellents are used repeatedly in a day or on consecutive days.
- Wash treated clothing before wearing it again. (This may vary for 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 help. If you go to a doctor because of the repellent, take the repellent with you to show the doctor.
- Sunscreen and insect repellent : the recommendation is to apply sunscreen first, followed by repellent. Follow instructions on the package for proper application of each product.

Insect repellent-sunscreen combination products : In the February 22, 2007 *Federal Register*, both the EPA (Environmental Protection Agency) and the FDA (Food and Drug Administration) posted separate notices requesting information to determine how they should regulate insect repellent-sunscreen combination products. There are concerns about the potential conflict in labeling and instructions for the use of the product. Often, directions indicate you should reapply sunscreens generously and frequently, which may promote greater use of the insect repellent than needed, thus posing unnecessary exposure to the insect repellent. Given its safety concerns and potential conflicts, EPA would like to solicit comments on whether these insect repellent-sunscreen combination products should be registered at all.