

Using Insect Repellants Safely

Insects such as mosquitoes, biting flies and ticks can transmit serious diseases. By using insect repellents properly, you can lower your risk of contracting an illness.

DEET is the most effective repellent that can be used on both skin and clothing. The pyrethroid-based insecticide permethrin is also very effective, but can only be used on fabrics and not directly on the skin. Using a combination of these two repellents is the most effective way to prevent insect bites.

Due to airport restrictions regarding flying with liquids, consider bringing solid repellent or ensure that your liquid/cream repellent is in a container smaller than 100 ml/3 oz.

DEET

Long-term studies have shown that DEET (N, N-diethyl-m- toluamide) is safe when used according to the directions, even for children and pregnant/breast-feeding women. DEET is the most recommended repellent because it combines superior effectiveness with safety. The rare confirmed incidents of toxic reactions to DEET have occurred when the product was not used properly. Products containing non-DEET repellents (eg. citronella) are not as effective, and some offer no protection at all.

Choosing the concentration of DEET

The DEET concentration varies depending on the product, and most products range between 10%-35% DEET. Although some products can reach as high as 100% DEET [concentration](#), higher DEET concentration does not provide additional bite protection. A product's DEET percentage determines how long it remains effective. Lower percentage products require more frequent reapplication.

Select your DEET product based on the amount of time you will spend outdoors. Use a higher percentage product if you will be outdoors for several hours. Also consider prolonged action preparations, such as "Ultrathon" or "slow release" formulas. These products are specifically designed to provide long-lasting protection, even if their DEET concentrations are lower than some other products.

Approximate duration of protection:

- 10% DEET: 1 to 3 hours
- 23% DEET: 4 to 6 hours
- 35% DEET: 6 to 8 hours
- 99% DEET: 10 to 12 hours

Products containing more than 35% DEET do not have a proportionate protection factor. The duration of prolonged action preparations such as "Ultrathon" or "Slow release" DEET formulations are not proportional to concentration of DEET.

How to Apply Insect Repellents Containing DEET

- Follow the instructions on the product label.
- Only use the product on bare skin not covered by clothing.
- Heavy application is not necessary to achieve protection.
- Reapply the product if you stay outdoors longer than expected, and after swimming or excessive sweating.
- Do not use on damaged or irritated skin.
- If using a spray product, do not spray directly on your face. Spray your hands and then rub them

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carefully over the face, avoiding eyes and mouth.

- Once back indoors, wash treated skin with soap and water. This is particularly important when repellents are used repeatedly in a day or on consecutive days.

It is possible to use both insect repellents and sunscreen at the same time. Apply the sunscreen **FIRST** and wait about 20 minutes before applying the repellent. Be aware that sunblock is less effective (by up to 33%) when used in conjunction with DEET. Reapply the sunblock more often than usual, and consider using a higher SPF.

Using DEET on Children

DEET should not be used on infants under two months old. Protect these infants by using netting over their carriers, dressing in protective clothing and limiting time in mosquito-infected areas.

Children over two months old can use a product containing up to 35% DEET. Follow the directions on the label. The [Center for Disease Control](#) reports that there have not been any cases of serious illnesses in children linked to DEET products when used as directed.

Consider length of time outdoors, prevalence of mosquitoes, and risk of mosquito-transmitted diseases when selecting a repellent for your child. When applying:

- Follow the recommendation on product label.
- First apply the repellent to your hands and then rub the product onto the child's uncovered skin. Avoid eyes and mouth, and use it sparingly around the ears.
- Repellent should not be applied on children's hands, since they may put their hands in their mouths.
- Keep repellent bottles out of reach.

If used as directed, 20% DEET has been proven to be safe for pregnant (2nd and 3rd trimester) or breastfeeding women.

Permethrin

Permethrin is a chrysanthemum-derived insecticide designed for use on fabrics. Do not use it on skin. Permethrin can be applied to clothing, shoes, bed nets, camping gear, etc. to repel and kill ticks, mosquitoes and other insects. The effect lasts after repeated laundering, but the product must be reapplied after every five washings (or two weeks of use). Impregnated bednets are protective for up to six months. There appears to be little potential for toxicity from permethrin-treated clothing.

Using Permethrin

- Do not use directly on skin.
- Spray outside or in a well-ventilated room. Do not spray near food.
- Apply to both sides of the fabric.
- Allow sprayed clothes to dry several hours before wearing them.
- Wash hands with soap and water after the use of products containing permethrin.

Do not forget that insect repellents are one of the several ways of avoiding insect bites. Also use screens and netting, protective clothing (long sleeves, pants, closed shoes/socks) and air conditioning to avoid mosquito bites.